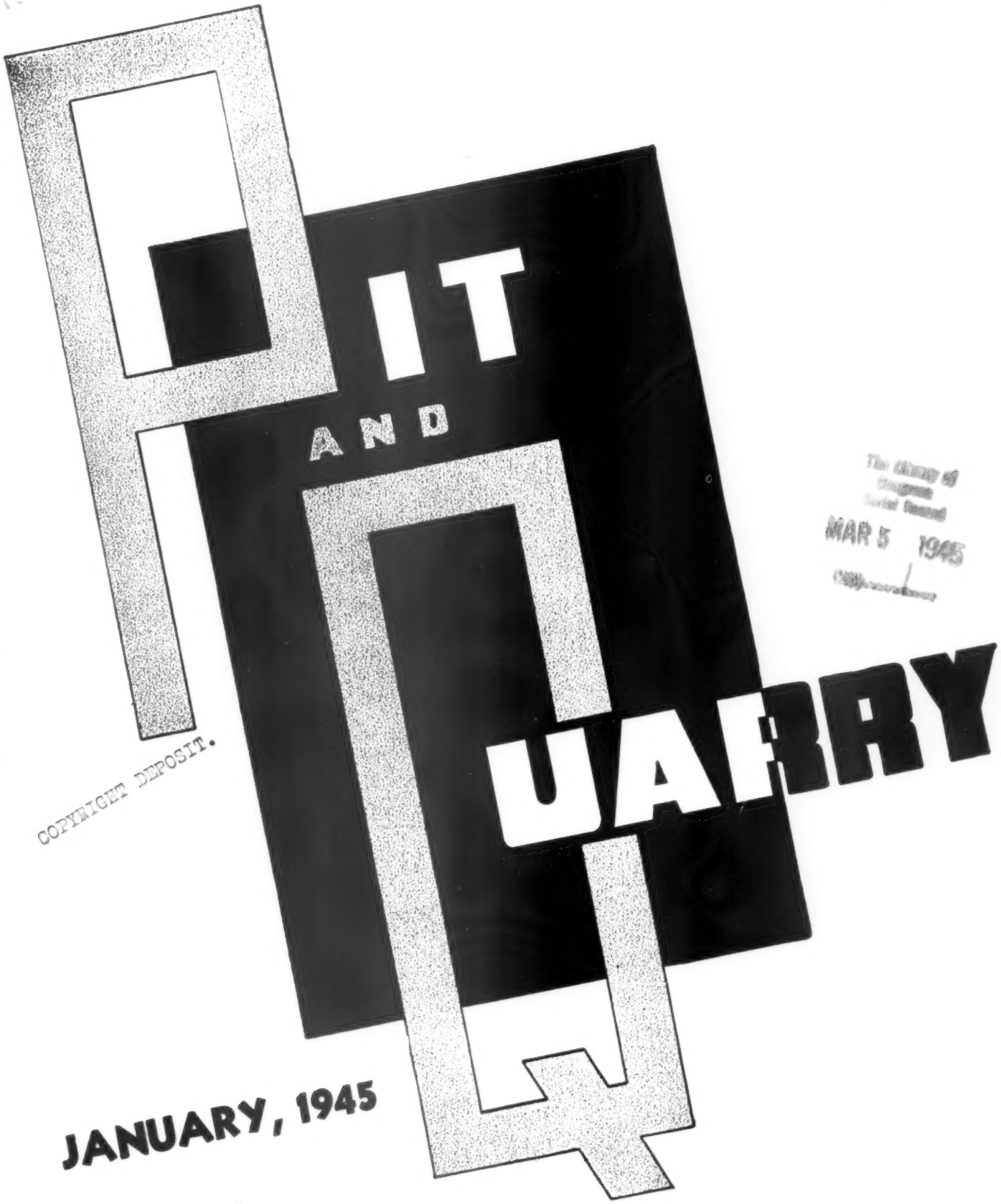


COPYRIGHT DEPOSIT.

MAR 5 1945

JANUARY, 1945

Twenty-Second Annual Review Number

TOTAL NET PAID CIRCULATION NOW AT NEW ALL-TIME PEAK — OVER 7,500

FOR 28 YEARS THE LARGEST PRODUCER CIRCULATION IN THE FIELD

MAR -3 1945

TNI P65

"The Perfect"

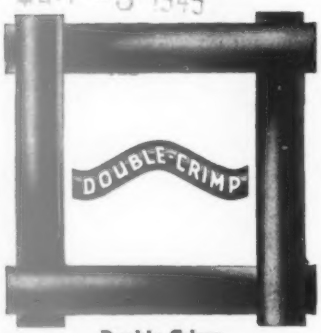
Wire Cloths and Screens

of

SUPER-LOY
STEEL
GALVANIZED STEEL
STAINLESS STEEL
NICKEL-CHROME STEEL
PHOSPHOR BRONZE
BRASS
COPPER
MONEL
NICKEL
ALUMINUM

•

Any Special Metal for Any Service

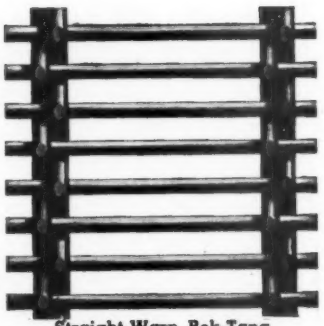


Double-Crimp

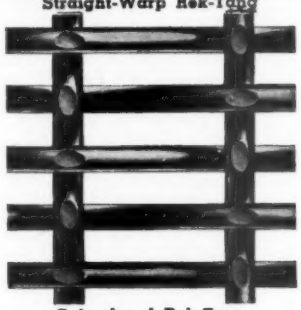
Arch-Crimp

Intermediate-Crimp

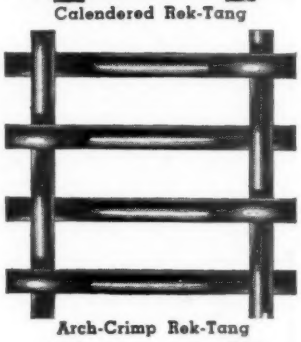
Flat-Top



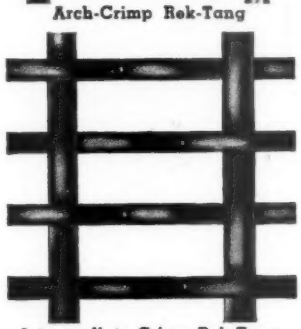
Straight-Warp Rek-Tang



Calendered Rek-Tang



Arch-Crimp Rek-Tang



Intermediate-Crimp Rek-Tang

"Perfect" WEAVES

ARCH-CRIMP
Coiled
DOUBLE-CRIMP
Double-Fill
Dutch
FLAT-TOP
INTERMEDIATE-CRIMP
REK-TANG
Selvage-Edge
STRAIGHT-WARP
Stranded
STA-TRU
Triple-Warp
Twilled
Twisted-Fill
Twisted-Warp

"Perfect" PROCESSING

Arc-Welding
Bending
Binding
Brazing
CALENDERING
Coiling
Crimping
Cutting
Dipping
Dishing
Finishing
Flanging
Flattening
Forming
Framing
Galvanizing
Jointing
Knuckling
Painting
Rolling
Selvaging
Shaping
Shearing
Slitting
Soldering
Spot-Welding
Squaring
Stitching
Tack Welding
Trimming

"Perfect" PRODUCTS

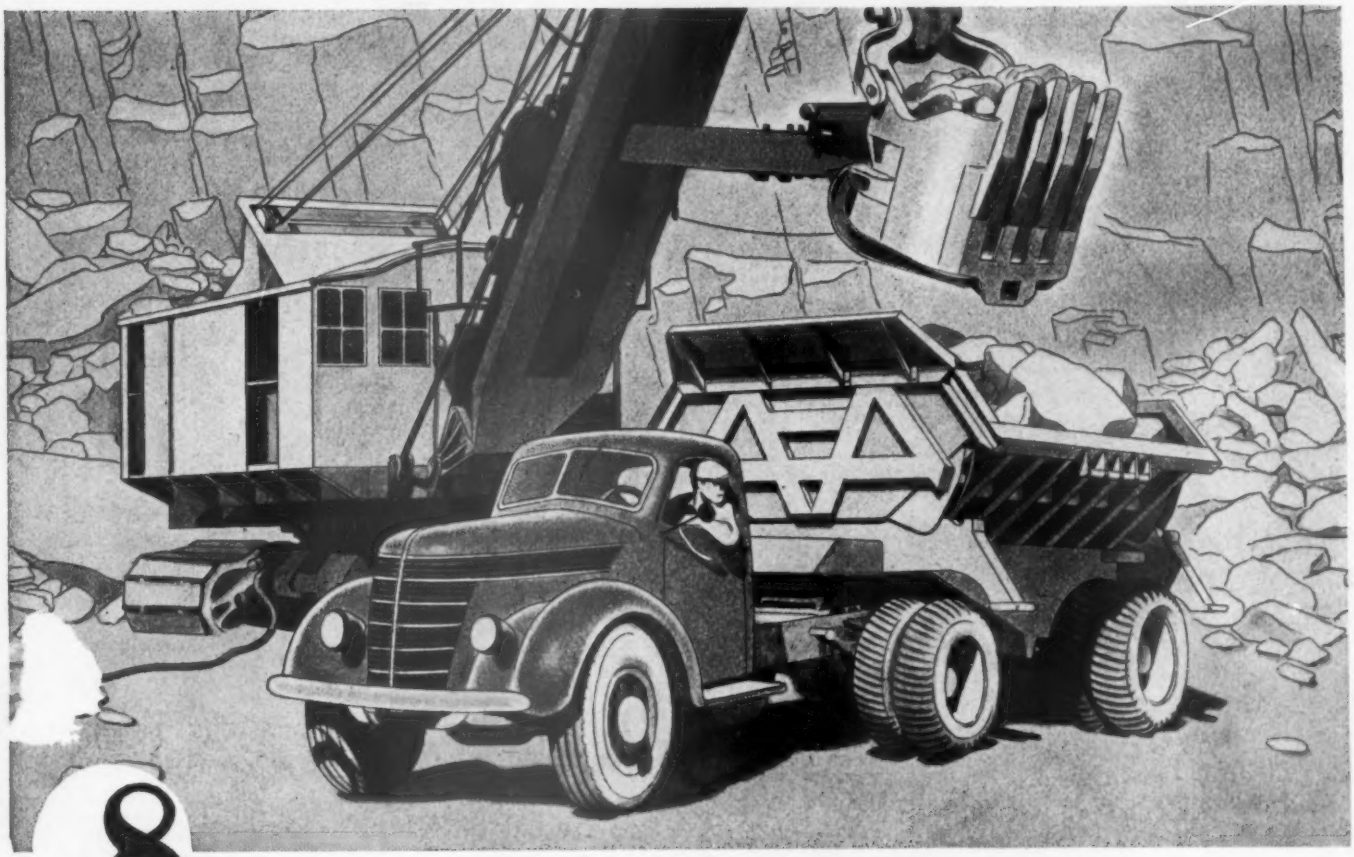
Baskets
Circles
Coils
Cones
Cylinders
Discs
Forms
Leaves
Lengths
Panels
Pieces
Ribbons
Rings
Rolls
Sections
Segments
Strips
Templates

Illustrations show items listed in capitals. Other wire cloths and screens will be illustrated in subsequent advertisements of this series.

Sta-Tru

ACHIEVEMENT

—measured in millions of tons!



Unknown 8 Years Ago . . . **Semi-Trailer Haulage Today Moves 40 Million Tons** *Annually*

When EASTON engineers were asked to build the first semi-trailer for quarry haulage eight years ago, the idea was new, untried, challenging. The first units were notably successful because EASTON had a background of achievement in solving quarry and mine haulage problems. And those pioneering Models RP-8 and RP-10 are today still in use and doing their part to swell to forty millions per year the tonnage of rock and ore loaded safely, hauled cheaply and discharged efficiently from side dumping EASTON Trailerized Mine Cars.

Write to: Engineering Counsel, Easton Car & Construction Co., Easton, Pa.

EASTON

INDUSTRIAL CARS
TRUCK BODIES · TRAILERS
ELECTRIC LIFT TRUCKS

B-1013

1 Model TR-15D—Double bodied, 15 to 20 ton capacity for use where crusher size or hopper length is limited.

2 Model CW—Thirty ton iron ore hauling overhead hoist side dump truck body.

3 Model TR-15T—Tandem "monkey" axle running gear with 80,000 pound capacity overhead hoist dump trailer.

PIT AND QUARRY, January, 1945, Vol. 37, No. 7. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago 5, Ill. Subscription price $2 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 50 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1897.

What makes these Upson-Walton Trucking Snatch Blocks Better Snatch Blocks

HERE'S a heavy-duty, safety-locking, trucking snatch block that is *completely new* in design . . . product of the engineering skill of this *modern 74-year-old company* . . . developed because of the need of our armed services for a snatch block that could take all kinds of tough, hard use and abuse. It's a *better* snatch block, and a *better* buy, because of many *exclusive features:*

EXTRA HEAVY FORGED STEEL SHELL PLATES: recessed for sheave to prevent jamming of rope. Rope positively cannot work in between shell plate and sheave. Lateral or offset pulls will not spring or bend the shell plate.

NEW DESIGN SWIVEL HOIST HOOK: extra heavy construction, drop-forged steel; provides a greater safety factor.

EXTRA HEAVY ONE-PIECE STRAP with forged eye connections. Strap and shell plates are riveted securely together.

EXTRA HEAVY CROSSHEADS, swivel links, safety links and pins.

HEAVY DUTY CAST STEEL SHEAVE: longer wearing. Heavy sections in tread and flanges of sheave—rope cannot wear through.

LARGE CENTER PIN: pressure alemite fitting is recessed into the center pin for easy lubrication.

STEEL SLEEVE OVER CENTER PIN materially increases bearing diameter, insuring longer life.

HEAVY BRONZE BEARING, pressure alemite lubricated.

AS WE GO TO PRESS, DELIVERIES ON UPSON-WALTON TRUCKING SNATCH BLOCKS ARE GOOD

U-W

Established 1871

THE UPSON-WALTON COMPANY

Manufacturers of Wire Rope, Wire Rope Fittings, Tackle Blocks

NEW YORK • PITTSBURGH • CLEVELAND • BUFFALO • CHICAGO

TO MAKE IT MORE

Troublefree in the pit

Here is the power take-off on your Northwest. There is no finer speed reducer built. Helical cut gears! Fully enclosed and running in oil in an oil tight case! Mounted on ball or roller bearings, assuring permanent alignment, freedom from excess wear, with perfect maintenance of correct center of distance. Construction like this assures complete freedom from the constant adjustment, costly and continuous replacement, characteristic of chain drivers.

This design is typical of Northwest quality. It's no wonder that Northwests are recognized for their trouble-free service at low cost. It's expensive to build but it pays dividends in longer machine life and more trouble-free service.

Northwests are fully convertible from shovel to crane or dragline by simply changing booms. You will want information to help you with your future plans. Let us send you details.

NORTHWEST ENGINEERING CO.
1622 Steger Bldg., 28 E. Jackson Blvd.
Chicago 4, Illinois

Quick shovel information for the man that OK's the purchase of shovels.

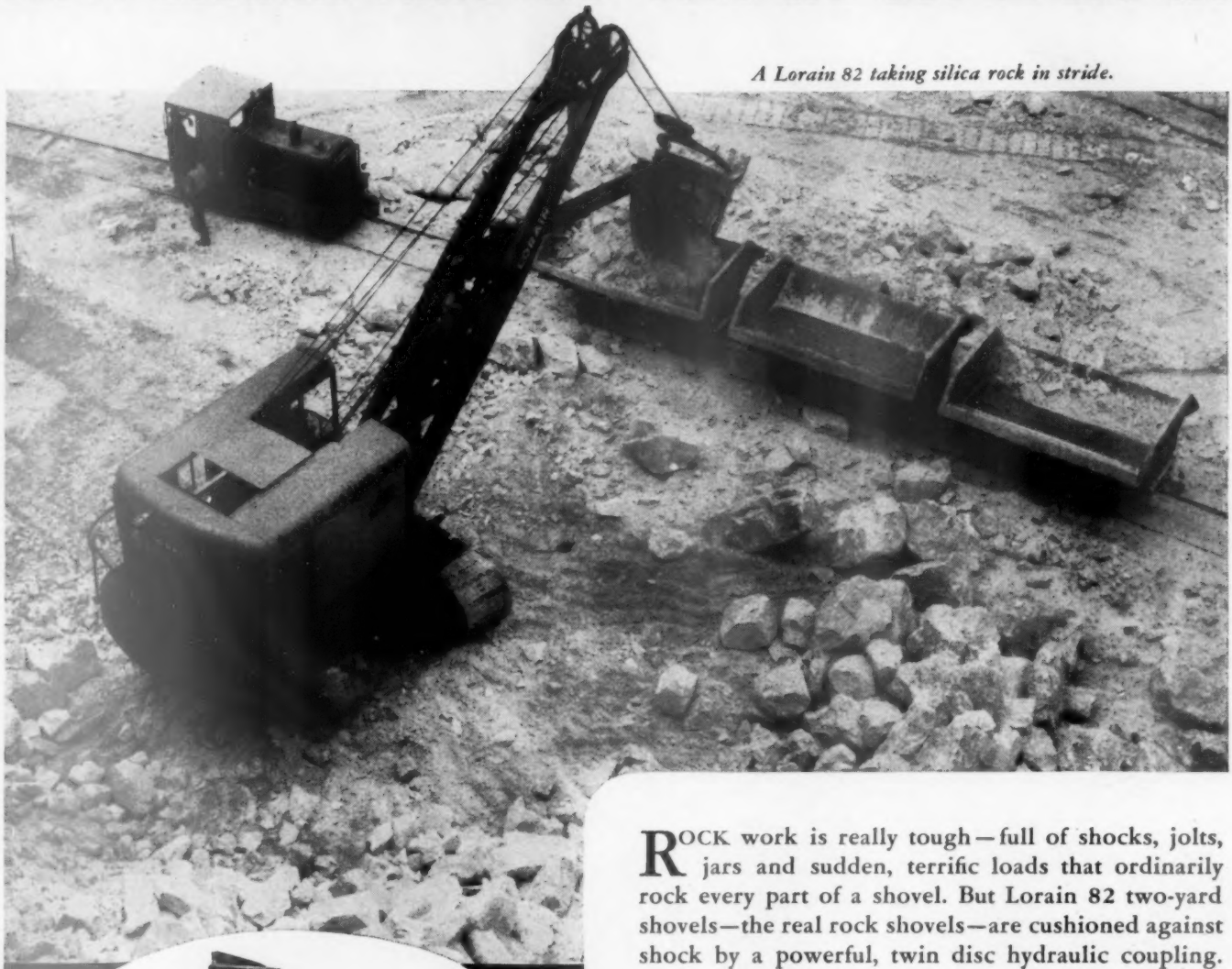
If it's a real Rock Shovel you won't have to worry about output in dirt

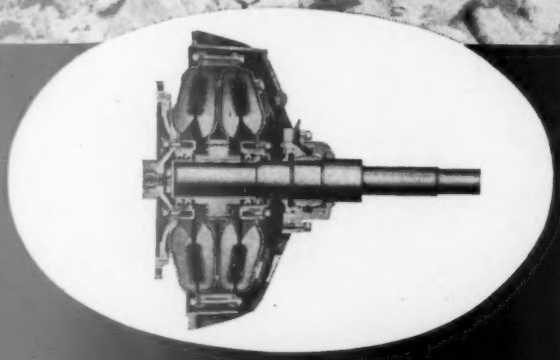
Convertible for any Mining, Material Handling or Excavating Problem

NORTHWEST

How Lorains take the "SHOCK" out of ROCK

A Lorain 82 taking silica rock in stride.





Power for Lorain rock shovels flows through this hydraulic coupling. Shocks and sudden strains on the shovel end are cushioned by the fluid connection.

ROCK work is really tough—full of shocks, jolts, jars and sudden, terrific loads that ordinarily rock every part of a shovel. But Lorain 82 two-yard shovels—the real rock shovels—are cushioned against shock by a powerful, twin disc hydraulic coupling.

This heavy-duty coupling, diagrammed at left, provides the perfect shock absorber between engine and load—eases strain on cable, boom and mechanism—and assures smooth operation under every condition. You'll never stall a Lorain 82 engine in rock no matter how hard the job.

Add this machine-saving, operator-saving "cushion" to Lorain's powerful all-welded, all-steel boom, center chain drive crawler and all-steel dipper stick and you'll see why these genuine rock shovels are setting new records for long service life, economy and speed where the going's toughest.

Cushion your next rock job with a Lorain 82, the shock-proof shovel, and watch profits mount.

Reg. Trade Mark

thew-Lorain

THE
THEW SHOVEL CO.
Lorain, Ohio

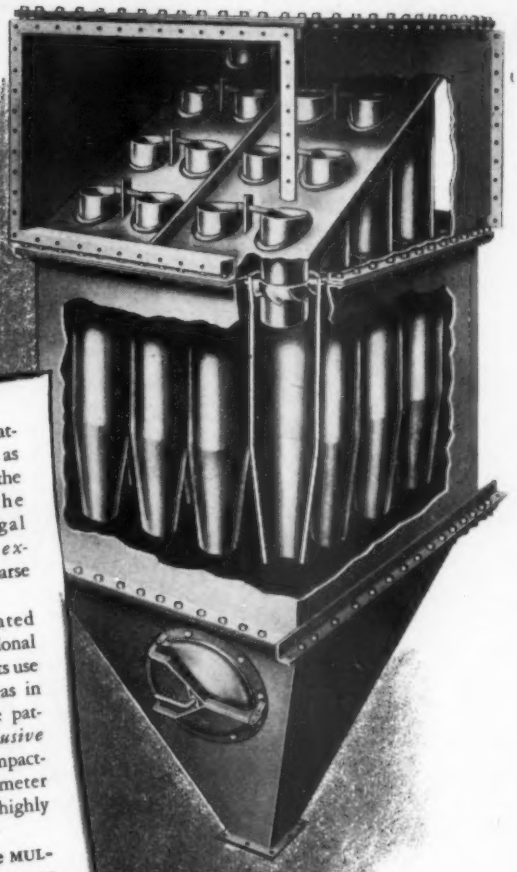
CRANES • SHOVELS • DRAGLINES • MOTO-CRANES

For Dust Recovery

Look at the multiple advantages you get in the MULTICLONE!

Not in just one or two ways...

but on every important feature!



MORE COMPACT!

Whether for installation in a new plant or existing structures, the unusual compactness of the MULTICLONE pays important dividends. Note below the MULTICLONE space savings compared with other leading makes of recovery equipment (all figures based on comparable performance) . . .

SPACE REQUIREMENTS OF COMPARABLE RECOVERY UNITS

Make	Relative Space Requirements In Sq. Ft.	In Cu. Ft.
Multiclone	1.0	1.0
Collector A	2.1	1.8
Collector B	5.9	3.2
Collector C	6.8	3.9

The MULTICLONE in some cases saves as much as *six* times the floor space, almost *four* times the cubic space of comparable units. Translate these savings into valuable building area and space availability in *your* plant and you'll see how important this MULTICLONE feature is!

HIGHER RECOVERY!

It's an engineering fact that the separating efficiency of a cyclonic tube *increases* as the tube diameter *decreases*, because the smaller the radius the greater the centrifugal forces to throw out *extremely fine* as well as coarse particles.

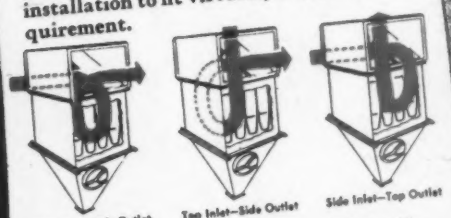
(Above) How vane guides gases in tube (Below) Vane distributes gas uniformly

But the complicated manifolding of conventional side entry cyclones limits use of small tubes, whereas in the MULTICLONE the patented vane—*an exclusive feature*—permits compacting many *small*-diameter tubes into one simple, highly efficient unit.

This is why the MULTICLONE collects not only the coarser particles, but also an unusually high percentage of the extremely fine particles of 10 microns and less!

GREATER ADAPTABILITY!

By eliminating complicated multiple manifolding, the simple inlet and outlet advantages of the MULTICLONE permit installation to fit virtually any plant requirement.



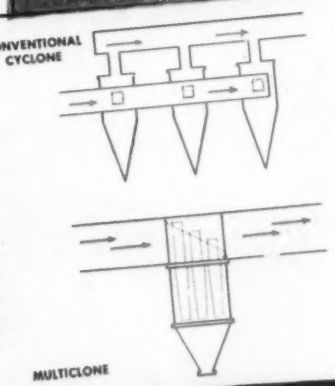
Side Inlet—Side Outlet | Top Inlet—Side Outlet | Side Inlet—Top Outlet

Where headroom is restricted, side-inlet side-outlet installations can be used. Or where side clearance is restricted, side-inlet top-outlet or top-inlet side-outlet installations can be made with the MULTICLONE. This feature, combined with MULTICLONE compactness, permits easy installation in even waste spaces of existing plants . . . spaces far too small for ordinary recovery units.

SIMPLER TO INSTALL!

Conventional side-entry cyclones require complicated manifolding of inlet and outlet ducts, are space-wasting and costly to install, expensive to insulate. Individual hoppers add further complications.

But the MULTICLONE, because of the patented *vane* that guides the gases in each tube, requires only a *single* inlet and *single* outlet header to service an entire bank of tubes. Simple, inexpensive, easy to insulate. Further, one hopper serves *many* tubes. Less maintenance, easier servicing!



THE MULTICLONE advantages outlined above are *important* advantages . . . advantages that mean greater efficiency, less maintenance, lower overall cost on your dust recovery installation. However, these are just a few of *many* vital advantages incorporated in MULTICLONE equipment. Before you install *any* recovery equipment it will pay you to get the complete story on MULTICLONE collectors. A wire, letter or phone call will place an experienced engineer at your service!

Send for this booklet which gives additional MULTICLONE advantages!

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Office: 1815 WEST NINTH STREET LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 140 S. DEARBORN ST., CHICAGO 3
HOBART BUILDING • SAN FRANCISCO 4, CALIFORNIA
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

WHEN YOU

Do You Get Real Help in Meeting Contract Deadlines?

BUY OIL_

Investigate this Complete Lubrication Service—

SOCONY-VACUUM'S practical aid to contractors goes far beyond mere lubrication of equipment. *It's the kind that helps save man-hours on the job—speeds contract completion!*

First of all, you get fine products—a complete quality line backed by 79 years of refining experience. Whether you operate 6 or 60 pieces of equipment, we can satisfy *all* of your fuel and lubrication requirements. *And we meet those requirements right out on the job!*

We assign a Socony-Vacuum representative to work with you—make recommendations after careful study of your equipment and job problems. You get engineering aid—tested Socony-Vacuum maintenance schedules that help cut out-of-service time . . . keep machines operating at maximum efficiency and economy!

Take advantage of these proved time-saving methods. Call in Socony-Vacuum today!

"ON YOUR STAFF—BUT NOT YOUR PAYROLL"—
Your Socony-Vacuum Representative

SOCONY-VACUUM OIL CO., INC. and Affiliates:—
Magnolia Petroleum Co., General Petroleum Corp. of Calif.

CORRECT LUBRICATION FOR EVERY PART OF EVERY MACHINE YOU OPERATE . . .
PLUS
1 ENGINEERING HELP on time-losing operating problems; 2 TESTED MAINTENANCE SCHEDULES that minimize service man-hours—keep equipment on the job; 3 PROMPT, DEPENDABLE DELIVERY—a reliable, on-the-job service that eliminates inventory problems for you!

We Switched Out The Trouble of Gear Shifting

Here is simplicity itself . . . absolute freedom from the mechanical complications of transferring power from one shovel motion to another.

Powered by its own heavy duty, shovel-type motor, the P&H propel machinery is completely independent of all hoisting and swinging motions. P&H's independent propel drive means simpler, easier move-ups . . . it means less trouble, less time out.

The change from dig to propel is instantaneous on a P&H Electric Shovel — accomplished by a mere flick of the master propel switch. Sliding gears and mechanical clutches with their complicated mechanisms are entirely eliminated — there is far more time for actual digging.

Here is another important advantage in the interests of lower tonnage costs for all kinds of open-pit operations. Behind it is P&H's 60-year leadership in applying electrical power to the movement of heavy loads.

P&H ELECTRIC SHOVELS
4451 West National Avenue
MILWAUKEE 14, WISCONSIN
HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

THE GREATEST FORWARD STEP EVER MADE IN ELECTRIC SHOVEL DEVELOPMENT

GREATEST JOB STAMINA

on every bruising haul

HEAVY-DUTY FEATURES of the Goodyear HARD ROCK LUG TIRE

1. Massive lug-bar tread
2. Extra-thick undertread
3. Tread-armored sidewalls
4. Superstrong Rayotwist cord carcass

YEARS of top-notch performance prove the standout stamina of Goodyear's Hard Rock Lug tire on the toughest, most bruising jobs of all.

Specially designed for rough, hard work, this brawny giant is armor-built throughout – with extra-heavy undertread and with massive, wide-based lugs that grip and guard, extending well over the shoulders to *tread-armor* the sidewalls against cuts and bruises.

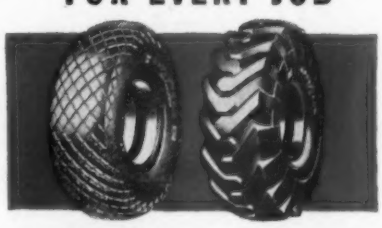
What's more, it's powered with Goodyear's famous universal two-way tread. No rights, no lefts, it has the same great grip reverse or forward. And it's a self-cleaning tread, with straight, wide, V-shaped grooves open at the ends and so pitched that dirt and stones actually slide out as the tire turns!

Now this time-proved bruisemaster – built from materials available today, including the mandatory amount of synthetic rubber – is tougher than ever, thanks to its Rayotwist body – made from Goodyear's patented rayon cord – *the strongest body we've ever used in a work tire.*

It is all these advantages combined that make Goodyear Hard Rock Lugs first choice with men who must move heavy loads over the toughest, roughest ground.

BUY WAR BONDS—BUY FOR KEEPS

THERE'S A GOODYEAR FOR EVERY JOB



For drawn vehicles specify Goodyear All-Weather Earth-Mover

For traction in soft going specify Goodyear Sure-Grip

Rayotwist, All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company

GOODYEAR

THE GREATEST NAME IN RUBBER

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

EXPLOSIVES Are Tools . . .

The Right Choice . . . Properly Handled . . . Gets the Most From the Job

Picking an explosive is like choosing the right tool from the kit—both call for a consideration of job requirements.

Atlas makes over 120 kinds and grades of explosives, many of them in different sizes and types of packing.

From them, you will find the right grade to fit *your* requirements for Strength . . . Velocity . . . Heaving Power . . . Water Resistance . . . Fume Qualities . . . Permissibility.

You'll find the right tool for more profitable blasting in the Atlas kit of explosives.

ATLAS HIGH EXPLOSIVES

AMMONIA DYNAMITES

HIGH DENSITY

- **EXTRAS** — Str. 15%-60% Vel. 7300-12,000 Den. 105
- **APEX** — Str. 20%-70% Vel. 9000-19,000 Den. 115
- **Stumping Expl.** — Str. 15%-50% Vel. 7800 Den. 103-117

FREE FLOWING

- **FLO-DYNS** — Str. 10%-65% Vel. 4600-5400 Bag Packed
- **Quarry Specials** — Str. 20%-65% Vel. 4000-5500 Bag Packed

LOW DENSITY

- **AMODYNS** — Str. 65% Vel. 5800-10,000 Den. 118-173
- **Stumping Expl.** — Str. 30%-65% Vel. 7400-9000 Den. 133-165
- **APCODYNS** — Str. 65% Vel. 7000-9000 Den. 128-180

PERMISSIBLE

- **COALITES** — Str. 55%-60% Vel. 6000-10,000 Den. 133-244
- **APCOLS** — Str. 60% Vel. 4500-7000 Den. 133-178

NITROGLYCERINE DYNAMITES

- **FARMEX Ditch.** — Str. 50% Vel. 18,000 Den. 103-108
- **Nitroglycerine Dyn.** — Str. 20%-60% Vel. 8800-19,000 Den. 105

GELATINS

PERMISSIBLE

- **GEL-COALITES** — Str. 35%-60% Vel. 8200-16,400 Den. 97-107

AMMONIA

- **GIANT** — Str. 30%-90% Vel. 7000-20,000 Den. 85-100
- **PETROGEL** — Str. 60% Vel. 18,000 Large Cartridges

NITROGLYCERINE

- **ATLAS** — Str. 20%-100% Vel. 6500-20,000 Den. 85-100
- **Blasting Gel.** — Str. 100% Vel. 20,000 Large Cartridges
- **Oil Well Expl.** — Str. 80%-100% Vel. 20,000 Large Cartridges
- **PETROGEL H. V.** — Str. 60%-100% Vel.18,000-20,000 Large Cartridges

SEMI-GELATINS

PERMISSIBLE

- **GEL-COALITES** — Str. 55%-60% Vel. 5900-12,000 Den. 120

AMMONIA

- **GELODYNS** — Str. 65% Vel.10,000-11,000 Den. 110-128

Str. % Strength.
Vel. Velocity of detonation, feet per second, in the open 1¼" x 8".
Den. Minimum number 1¼" x 8" cartridges per 50-lb. case.

• There is profit in the right explosive •

CHEMICALS ATLAS EXPLOSIVES

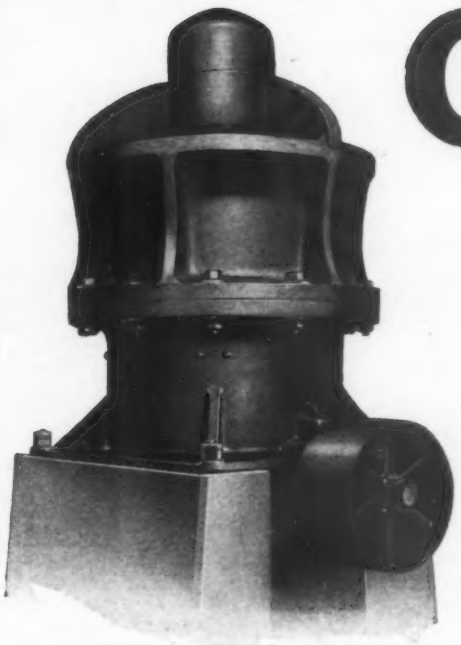
ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

Offices in Principal Cities

Industrial Explosives • Industrial Finishes • Coated Fabrics • Acids
Activated Carbons • Industrial Chemicals • Ordnance Materiel

Reduction Crushers



OVER 400

IN SATISFACTORY OPERATION

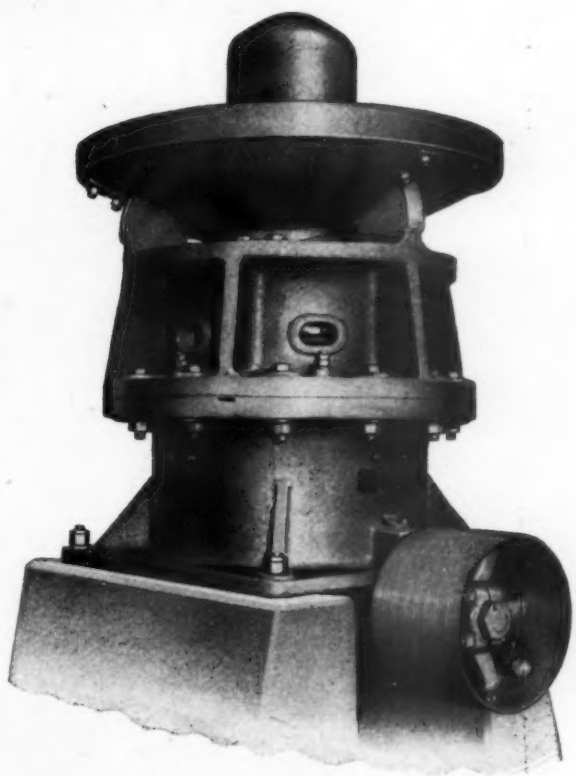
THE TY Crusher is fitted with Non-Choking Bell Shaped Heads and Concaves, which accounts for the many crushers in operation, crushing practically every known type of ore and rock.

Non-Choking means no packing, with resultant large capacity and minimum horsepower. Built in sizes to meet any requirements. Bulletin No. 3112.

FINER CRUSHING

WITH MULTI-STAGE CRUSHERS

THE Multi-Stage Crusher is a combination of two Reduction Crushers. The first stage acts as a feeder and preliminary crusher. The second stage does the final crushing without packing. Result: large capacity to fine setting with minimum horsepower. Bulletin No. 1113.



WE BUILD

Gyratory Crushers	Feeders	Casting Machines
Jaw Crushers	Classifiers	Accessories
Reduction Crushers	Samplers	Complete Milling and Smelting Plants
Crushing Rolls	Jigs	
Grinding Rolls	Furnaces	Rotary Kilns
Ball Mills	Settlers	Rotary Coolers
Tube Mills	Crucibles	Rotary Dryers
Rod Mills	Forehearths	
Grizzleys	Converters	

TRAYLOR

ENGINEERING & MANUFACTURING CO.

MAIN OFFICE AND WORKS — ALLENTOWN. PENNA..U.S.A.

NEW YORK CITY 3416 Empire State Bldg.
CHICAGO 2051 One La Salle St. Bldg.
SALT LAKE CITY 101 West Second South St.
LOS ANGELES 919 Chester Williams Bldg.
SPOKANE S. 2707 Rhyolite Rd.
B. C. EQUIPMENT CO., LTD. 551 Howe St., Vancouver, B. C.

AGENCIES

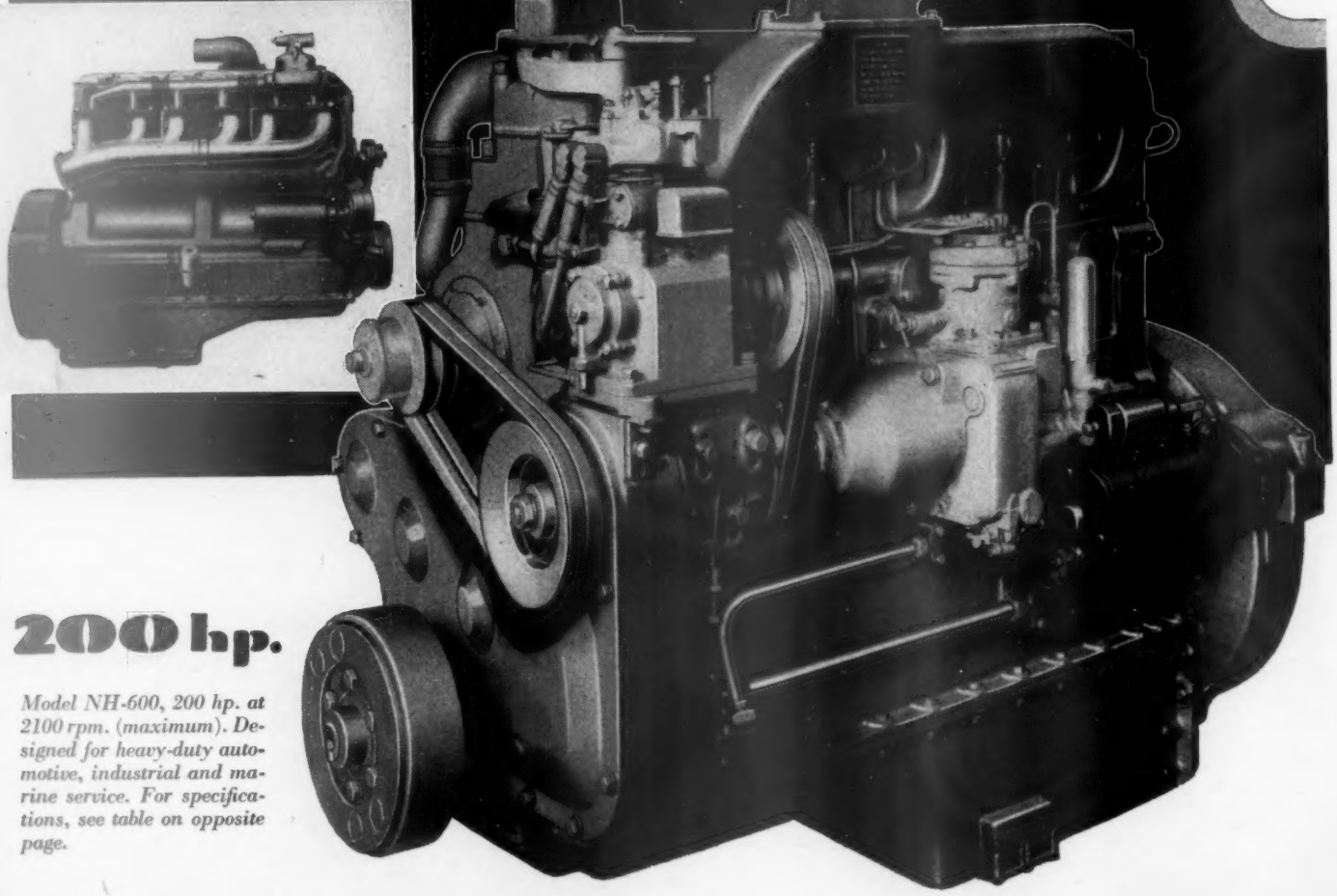
R. S. Armstrong & Bro. Co. 676 Marietta St., N. W. Atlanta, Ga.
Balzer Machinery Co. 2136 S. E. 8th Ave. Portland, Ore.
Pat Flanagan Box 445 Tampa, Fla.
Indiana Equipment Co., Inc. 327 W. Market St. Indianapolis, Ind.
W. H. Milroy 129 Church St. New Haven, Conn.
Roy C. Whayne Supply Co. Cor. 8th & Main Louisville, Ky.

Nth Degree in Power

Models NH-600 and NHS-600

CUMMINS Dependable DIESELS

SINCE 1918...PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS



200 hp.

Model NH-600, 200 hp. at 2100 rpm. (maximum). Designed for heavy-duty automotive, industrial and marine service. For specifications, see table on opposite page.

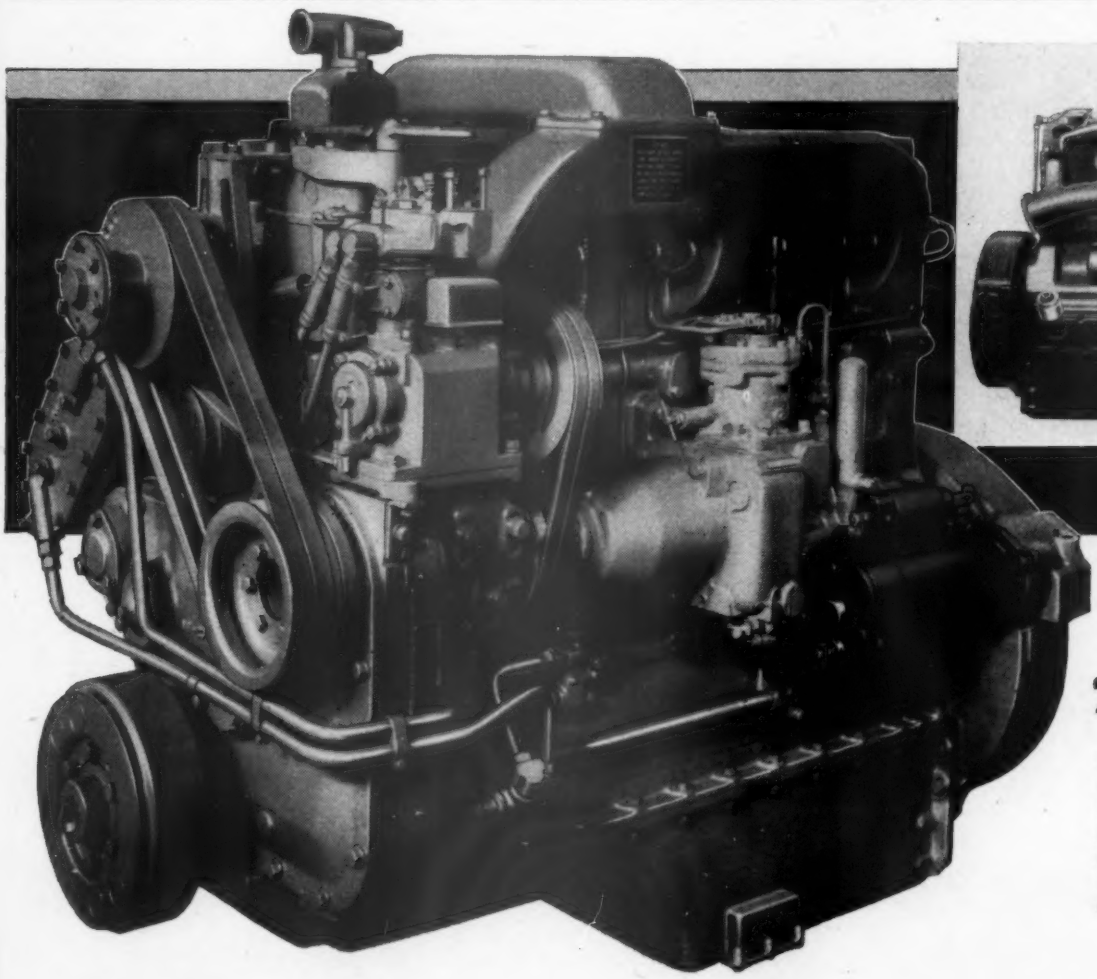
Combining "something old and something new," Cummins—builder of the *original* high speed diesel—now introduces two additions to the line of Cummins Dependable Diesels: Models NH-600 and NHS-600.

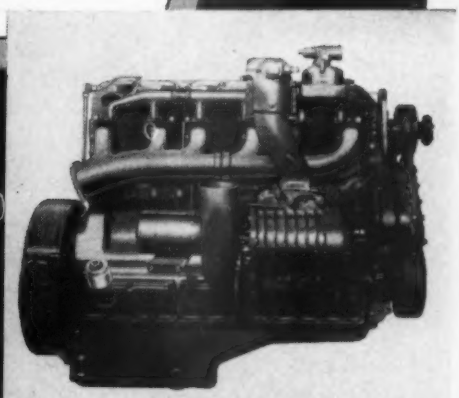
The "something old" is the basic design of the well-known Model H Cummins Diesel . . . a design proved sound by a 12-year demonstration of low-cost, dependable performance in all types of heavy-duty applications.

The "something new" in NH and NHS Cummins Diesels includes dual intake and exhaust valves, higher rpm., larger piston displacement and many other refinements that will give you "more power per pound" and the Nth degree in power efficiency . . . that will assure increased payloads and higher profits on your *tough* jobs—automotive, industrial or marine. A comprehensive brochure containing complete specifications and engineering data on Series NH and NHS Cummins Dependable Diesels is now available. Write for your copy of Bulletin 5206-22 today. CUMMINS ENGINE COMPANY, INC., Columbus, Indiana.

Model	No. of Cyl.	Bore and Stroke	Displacement (cu. in.)	HP. (Maximum)	RPM. (Maximum)	*Weight	Weight per Horsepower	*Dimensions
H	6	4⅞" x 6"	672	150	1800	2165	14.43	57⅝" x 46 ½" x 30¼"
HS	6	4⅞" x 6"	672	200	1800	2580	12.9	58 5/32" x 46 ⅜" x 29 3/16"
NH	6	5⅛" x 6"	743	200	2100	2500	12.5	58 9/32" x 49 3/16" x 28 7/8"
NHS	6	5⅛" x 6"	743	275	2100	2850	10.36	60 3/32" x 48 13/16" x 32 3/8"

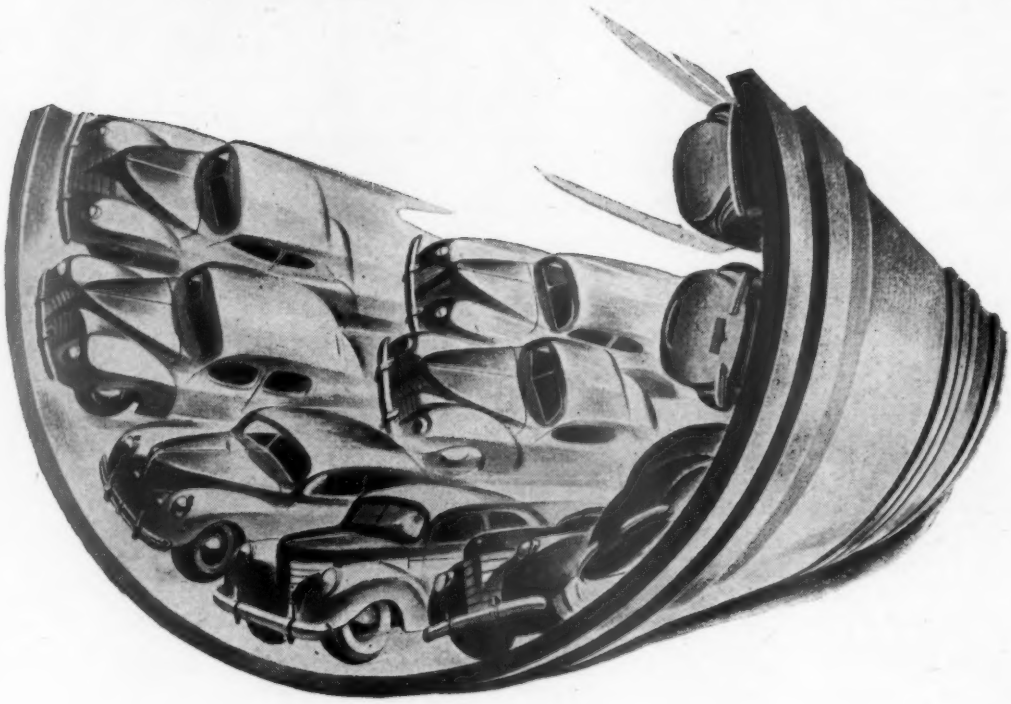
*Weights and dimensions are for engine as designed for automotive application (as illustrated) and will vary with units designed for industrial and marine service. Weights are based on minimum use of light weight materials.





275 hp.

Supercharged Model NHS-600, 275 hp. at 2100 rpm. (maximum). Designed for heavy-duty automotive, industrial and marine service. For specifications, see table above.



the most frequently traveled road

The most frequently traveled road is a very short one . . . only a few inches long. It is the cylinder in your gasoline or Diesel engine. And the piston and rings travel over this short road more than 3000 times a minute . . . 180,000 times an hour.

That is why cylinders wear out. But a new treatment of the surface slows up the wear rate tremendously.

PORUS-KROME, applied by Van der Horst process, multiplies the cylinder life four to twenty times, eliminates scoring and scuffing and greatly increases engine reliability.

PORUS-KROME is pure, hard chromium which is produced and bonded to the cylinder bore by this patented process. It has tiny pores and channels in its surface which serve as reservoirs for lubricating oil . . . feeding it back to the surface as needed. It reduces both corrosion and wear on cylinders and rings, and thus assures a substantial saving in engine operating costs.

Of course, you will want PORUS-KROME on the cylinders of your engines. But right now the entire capacity of the three Van der Horst plants is required to process cylinders of engines for war machines . . . tanks, submarines, landing craft, etc.

However, as soon as the war requirements are lessened, PORUS-KROME will be available to you in new engines and also in replacement liners for existing engines. Then you, too, can have this greater engine reliability. *Plan now* to use PORUS-KROME in your own engines.

VAN DER HORST

U. S. PATENTS 2,048,678 AND 2,314,604

PORUS - KROME

Good for the Life of your Engines

VAN DER HORST CORPORATION OF AMERICA

AN AFFILIATE OF DRESSER INDUSTRIES

OLEAN • NEW YORK
CLEVELAND 11 • OHIO

TAMPTITE

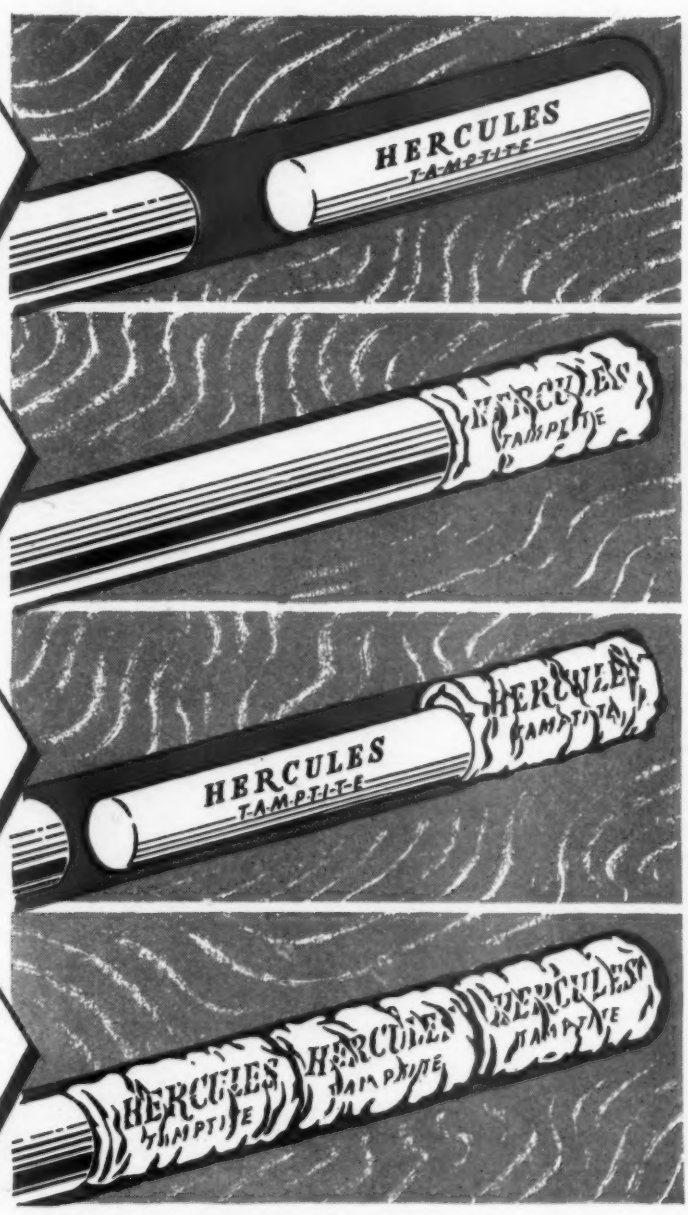
SAVES TIME · SAVES LABOR · PACKS SNUGLY · GIVES BETTER BREAKAGE

1 With Tamptite, you load your favorite Hercules explosive into the bore hole in the usual manner. There's no need to split the cartridge. That saves time and eliminates loose, spilled powder.

2 Next, the tamping rod compresses the dynamite in the hole, packs the charge tightly. There is practically no air space remaining around the charge.

3 Insert another Tamptite cartridge. Then, simply tamp the same as the first cartridge. Continue inserting and tamping cartridges for whatever loading you wish.

4 Your charge is concentrated snugly for maximum blasting effectiveness. The result is better breakage of ore or rock, speedier mucking, and a faster mining cycle.



Order your favorite Hercules explosives in Tamptite cartridges. All the customary grades and sizes of Hercules Gelamites*, Hercomites*, Extra Gelatins, Gelatins, and Extra Dynamites are available in this time-saving wrapper.

HERCULES

EXPLOSIVES

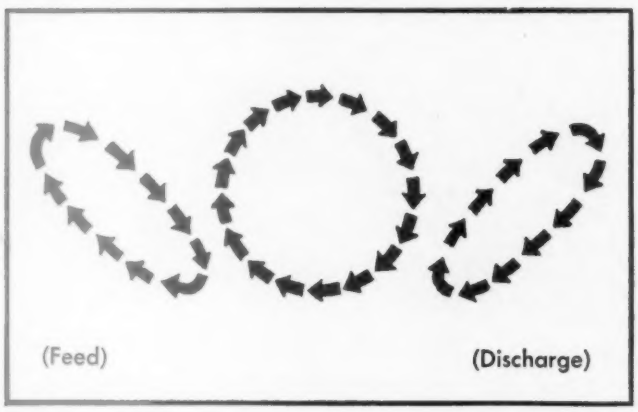
*REG. U. S. PAT. OFF. XR-45

HERCULES POWDER COMPANY INCORPORATED .... 960 KING STREET · WILMINGTON 99, DELAWARE

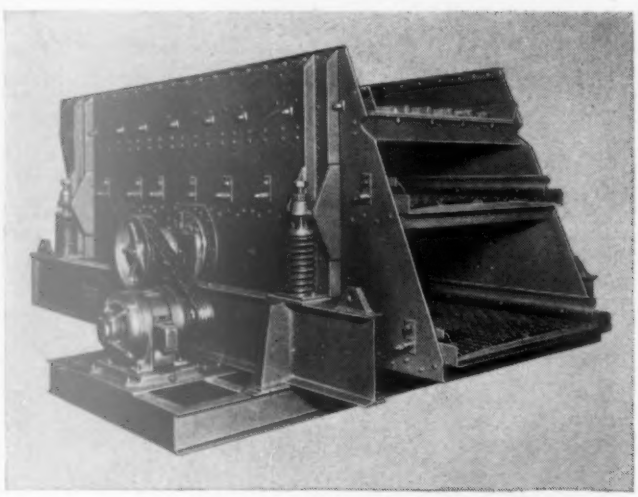
ORDER HERCULES EXPLOSIVES IN TAMPTITE CARTRIDGES

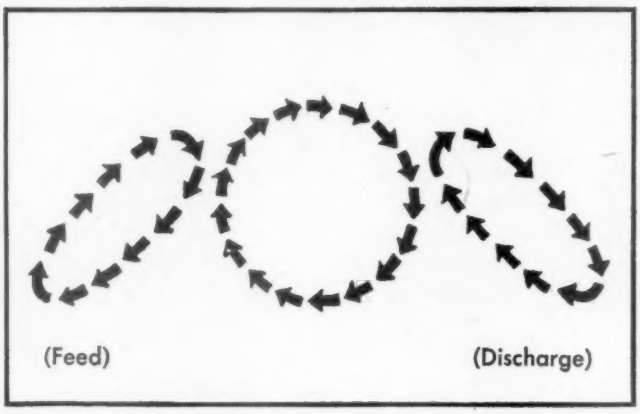
Which Vibrating Screen is

THE BASIC TYPES. ALLIS-CHALMERS

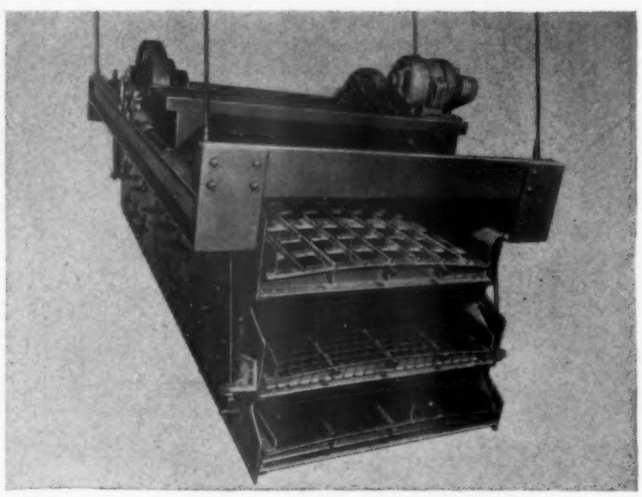


1 STYLE "C" SCREEN — a 4-bearing extra-heavy duty screen designed for large feed. Elliptical motion at feed end tends to *retard* travel of large pieces; circular motion at center *increases* rate of travel; elliptical motion at discharge end *further accelerates* rate of travel — to give you rapid scalping operation. This principle of vibratory motion assures highly efficient separation, especially where feed contains a wide range of particle sizes. Examples: "run of mine ore," quarry material, and pit run material.





2 STYLE "B" SCREEN — a 4-bearing heavy duty screen designed for medium-large feed. Eccentric balanced mechanism mounted above the screen produces an elliptical motion at feed end that starts material at a *rapid rate;* circular motion at center that *slows down* rate of travel; elliptical motion at discharge end that *further retards* rate of travel . . . to provide ample time for efficient screening. Because of this principle of motion, Style "B" screens are equally adapted for wet screening, washing, or sizing. Bulletin B6005.

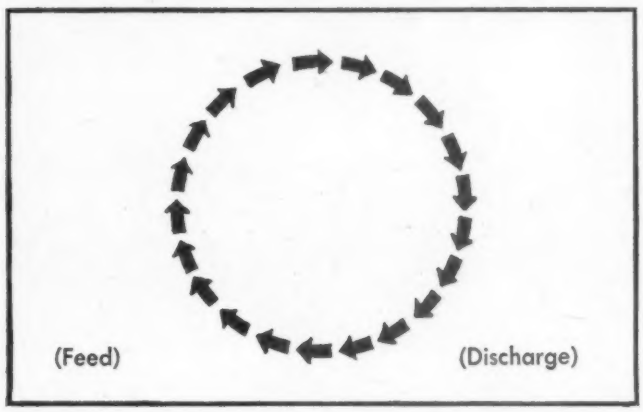


NEXT TIME you have a problem . . . call on Allis-Chalmers. Building one of the world's broadest lines of mining and processing equipment, A-C is in a *unique* posi-

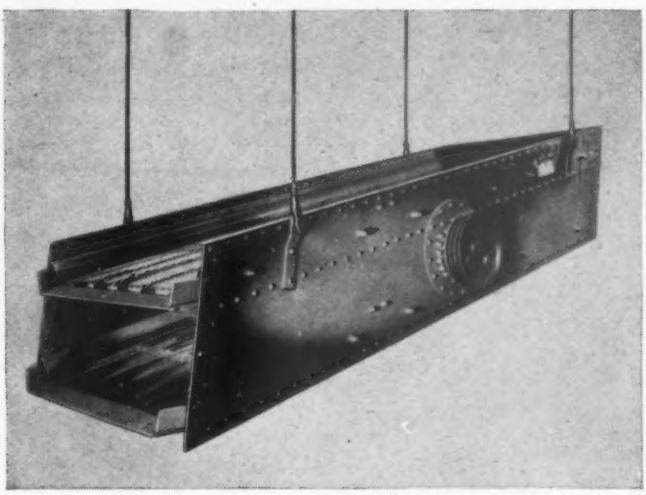
WE WORK FOR VICTORY
WE PLAN FOR PEACE
BASIC EQUIPMENT FOR CRUSHING & MINING INDUSTRIES:
ALLIS-
Jaw, Gyratory, Hammer & Roll Crushers, Ball & Rod Mills
Kilns, Coolers, Roasters, Dryers

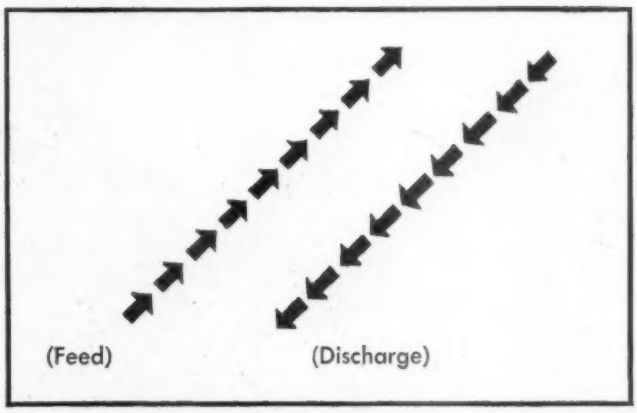
the Best for You? HERE ARE 4 OF

OFFERS YOU A CHOICE FROM ALL 4 . . .

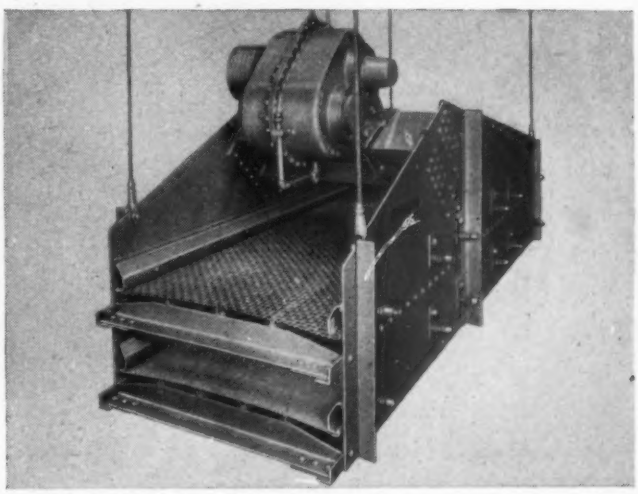


3 RIPL-FLO SCREEN — a 2-bearing screen designed for moderate to heavy duty, fine to coarse screening. A circular vibratory motion *at all points* on screen surfaces is produced by an eccentric shaft and balanced mechanism. Eliminating 2 outer bearings and stationary support frame, the Ripl-Flo screen is *warranted* to perform the same *or better* screening job than conventional 4-bearing screens. Width and weight are also reduced — you save on *lower initial cost* and lower power requirement. Write for Bulletin B6151.





4 LOW-HEAD SCREEN — utilizing a combination of 45° *straight-line* motion and *horizontal* deck operation, the Low-Head screen is ideally suited for wet screening, washing, rinsing or dewatering. Is broadly used in screening of coal, aggregates, metal and non-metallic material, and in "sink-float" operation. And because it is designed for *horizontal* operation, the Low-Head screen saves both headroom and space . . . cuts dollar cost of installation or remodeling. For full particulars, write for Bulletin B6330.



tion to offer you valuable know-how in teaming up screens with other machinery in your plant. Contact our nearby district office, or write ALLIS-CHALMERS, MILWAUKEE. A 1787B

Tune in the Boston Symphony, Blue Network, every Sat. Eve.

CHALMERS

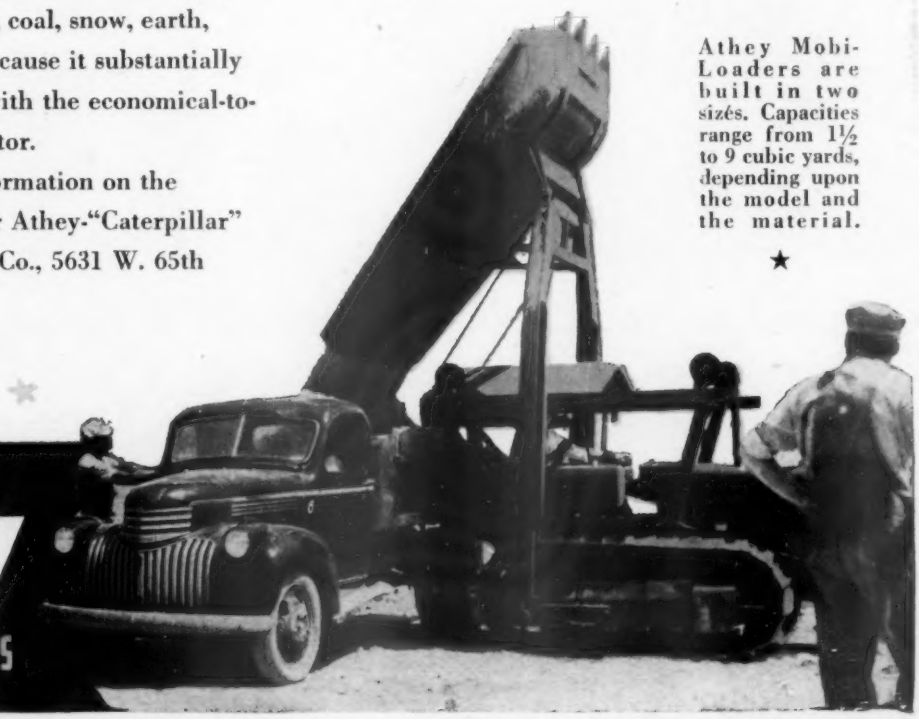
Vibrating & Revolving Screens, Feeders, Conveyors, Hoists | Washers, Scrubbers, Blade Mills, Centrifugal Pumps | Tractors, Gasoline Power Units, etc. | Motors, Texrope Drives, Power Equipment

A BEAR FOR FAST LOADING

The closing year goes down in history as a year for speed in construction. In jumping ahead of the Axis nations on every score, fast production was essential. A time-saving tool that gained scores of new friends on the military and home front is the Athey MobiLoader. It's *fast*, because it's an overhead loader that digs and hauls bigger loads with no waste motions. It goes forward into a stockpile, with bucket down to dig its load, and travels directly back in reverse, discharging the material into the truck or fill. *Versatile*, because it can load a wide range of materials, including gravel, ore, coal, snow, earth, crushed stone, etc. *Economical*, because it substantially reduces loading time and works with the economical-to-operate "Caterpillar" Diesel Tractor.

Why not write a note for full information on the Athey MobiLoader, either to your Athey-"Caterpillar" Dealer, or to Athey Truss Wheel Co., 5631 W. 65th Street, Chicago, Illinois.

Loading Bauxite ore for Bauxite Co. of Alabama with Athey W4-1 MobiLoader. 4-yard trucks are loaded in less than 2 minutes this fast, simple way.



Athey MobiLoaders are built in two sizes. Capacities range from 1½ to 9 cubic yards, depending upon the model and the material.

★

Athey
MOBILOADERS

"BEATS ANYTHING YOU EVER SAW!"

Here's E. F. Schildberg's Midwest limestone set-up. Two "Caterpillar" Diesel D13000's and four D8800's run hammermill, jaw crusher, conveyors and shovel.

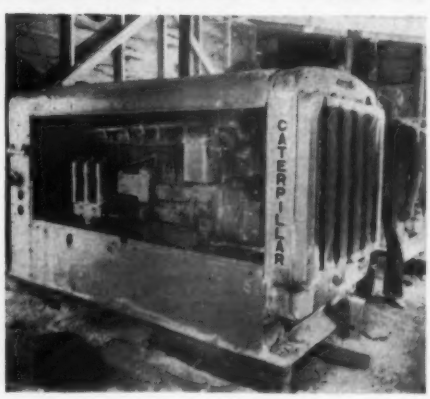
Speaking of the way a "Caterpillar" Diesel handles a heavy load, Mr. Schildberg says: "Beats anything you ever saw for pulling—it will hang on when a slug hits and lug like steam."

And, of course, there's no other type of power to compare with "Caterpillar" Diesel when it comes to all-round operating economy. These finely engineered engines burn the inexpensive lower grade fuels; and through the famous "Caterpillar"-built fuel injection system they get an amazing amount of power out of every drop. They require no specially trained attendant—and practically no attention beyond keeping them supplied with fuel, water and lubrication. There are no operating adjustments; and overhauls are few and far between. For example: one of Mr. Schildberg's D13000's went 7000 hours without having the head off. "I'd certainly buy 'Caterpillar' Diesels if starting a new plant," said he, "and would have them in *everything* — even in trucks if available."

"THE EARLY BIRD, ETC."

For still some time the demand for "Caterpillar" Diesels will exceed the supply available to catch up with the nation's non-war needs. Best way to shorten delivery time on *your* new "Caterpillar" Diesel is to be among the "early birds" in seeing your "Caterpillar" dealer.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

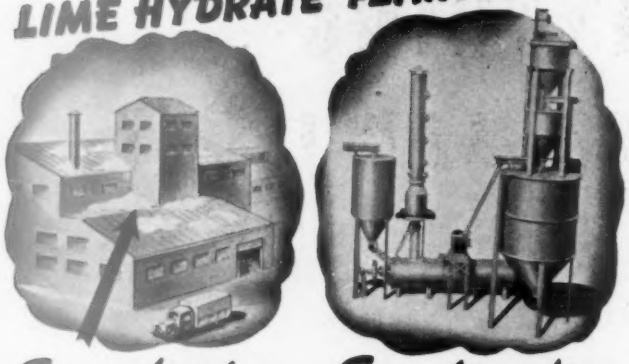


CATERPILLAR DIESEL

REG. U.S. PAT. OFF.

ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

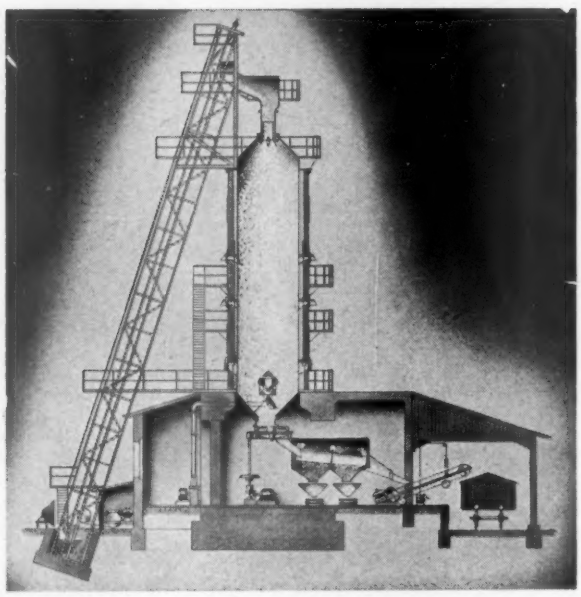
LIME HYDRATE PLANTS—



Stop that loss . . Save lime fines

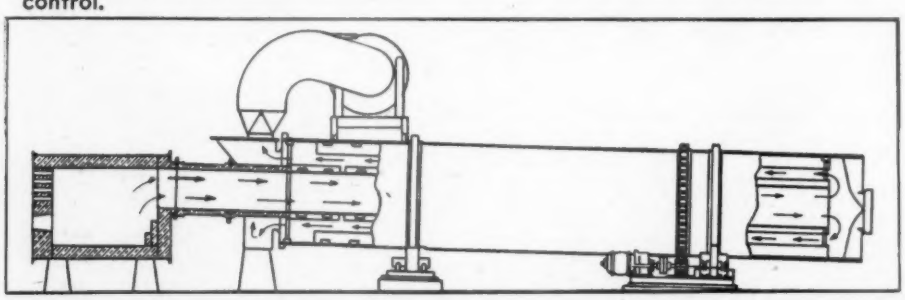
LIME Production for Profit

KUNTZ GRAVITY SYSTEM OF LIME HYDRATION — Provides absolute control of the hydration process in a single unit. Saves up to $1.50 per ton because patented dust control stops all loss of lime fines. Heat of hydration, often wasted, is used to heat water applied to hydrator. The only automatic system of one-man operation giving 100% control of quality and uniformity. Batch or continuous method. Can be applied to any type of hydrate plant.



YORK-KUNTZ AUTOMATIC VERTICAL LIME KILN (Above)—Here's an automatic kiln that eliminates crushing and assures continuous control. Result: a uniform burn that reaches the absolute peak of fuel efficiency. Features: either mixed feed, coal or gas firing; continuous discharge and continuous feed; adjustable distribution; center load support; center combustion control.

YORK DOUBLE SHELL DRYER (Lower Right) — High thermal efficiency and the resulting economy of operation of the York Dryer is unsurpassed. Double shell allows hot gases to dry and pre-heat the stone by radiation. Gases absorb moisture in inner flue, completing the drying process. Result: high fuel efficiency with resultant fuel economy.



OTHER McGANN PRODUCTS — LIME PLANTS COMPLETE - HYDRATORS - SHAFT KILNS - ROTARY KILNS - DRYING MACHINERY - TANKS - BINS - GREY IRON CASTINGS - SUGAR MACHINERY - SPECIAL MACHINERY FROM ENGINEER'S DESIGNS

LIME & HYDRATE PLANTS CO.

Associates McGANN MANUFACTURING COMPANY, *York, Pa.*

If you remove the cover of a FARREL GEAR UNIT...

. . . YOU FIND that the gears are of the continuous tooth herringbone design — *The Gear with a Backbone* —precision generated by the famous Farrel-Sykes process. Among the advantages of these gears are:

1. *Extra strength and high load-carrying capacity in small space.* There is no center groove between the two helices, which means that the entire face width is put to work.

2. *Smooth, quiet operation.* The result of interlacing of the teeth, gradual engagement and inclined line of pressure.

3. *Long, trouble-free service.* Oblique lines of contact and evenly distributed pressure eliminate any tendency of teeth to wear unevenly, and maintain correct tooth action throughout the life of the gears.

Farrel Gear Units are available for a wide range of applications and service conditions. For further information, write for a copy of Catalog 438.

FARREL-BIRMINGHAM COMPANY, INC.
ANSONIA, CONN. • BUFFALO, N. Y.
Plants: Ansonia and Derby, Conn., Buffalo, N. Y. — Branch Offices: New York, Pittsburgh, Akron, Los Angeles

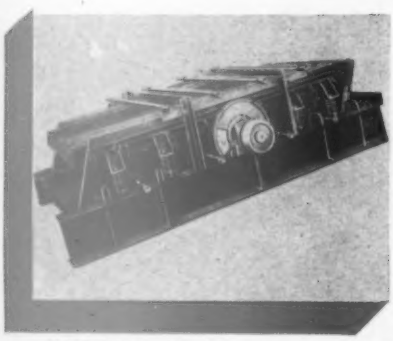
FARREL

"1 for all" KENNEDY-

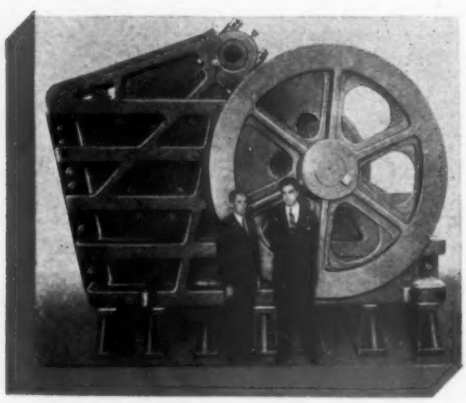
War-time producers of crushed stone and allied materials must master the problem of expanding production schedules and diminishing machinery replacements.

The fully modernized plant, equipped *throughout* with KENNEDY-VAN SAUN processing and handling equipment, fully meets this emergency by combining record output with lowest machine "down-time".

For "unconditional economy" in crushing, pulverizing, washing, screening, and conveying non-metallic minerals, these KVS units—finely engineered and durably constructed—are the first requirement of efficient plant operators.



KVS Vibrating Screens give about 95% sizing efficiency. Low installation and maintenance costs. Available in three types, and many sizes.



KVS Swing Jaw Crushers can stand the severest crushing strains. Furnished in sizes to meet any tonnage or feed demands.

Write for Bulletins

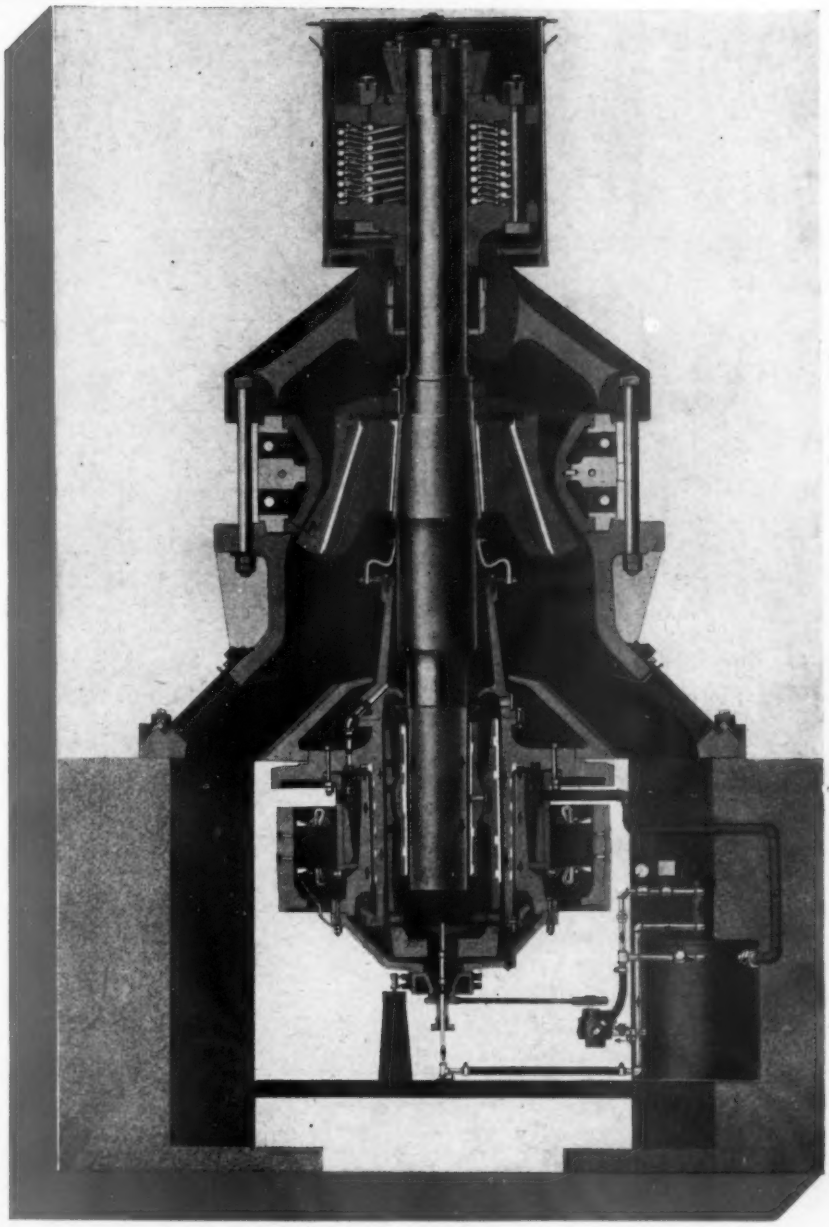
KVS Gyratory Gearless Short Shaft Standard Crusher for primary reduction with synchronous motor built in the pulley, giving highest efficiency.

KENNEDY-VAN SAUN MFG. & ENG. CORPORATION

"COMPLETE OUTFITTERS"

to operators of Sand, Gravel, and Crushed Stone Plants

-VAN SAUN



KENNEDY Ball Bearing Gearless Crusher,

. . . low head type, for fine crushing.

Here is a machine that will do *more* work than any geared crusher, and with *less* cost for operation, maintenance and repairs.

Synchronous motor built-in pulley saves power by applying all of it directly to crushing.

Other features include reversible concaves or grinding ring which gives double the wear of wearing surfaces than can be found in any other crusher, forced feed lubrication, easy accessibility, quick adjustment of crusher opening.

Ask about our famous

No. 49½ Model

ARMY E NAVY

Write for Bulletins

2 PARK AVENUE • NEW YORK 16, N. Y. FACTORY: DANVILLE, PA.

There's been a big change

★ Imagine going places in a horse-drawn hack, when the tempo of the times demands a modern taxi!

The ever-increasing tempo of transportation, industry and agriculture demands a tapered roller bearing with greater capacity and longer life. Tyson found the answer—developed a bearing with thirty percent more load-carrying rollers around the raceway.

More rollers, more capacity. More rollers, longer life. More rollers, increased rigidity. The Tyson "All-Rolls" Bearing is hailed as the sturdiest and longest-lived bearing ever built for heavy-duty service.

The big name in bearings today is . . . **TYSON!**

TYSON BEARING CORPORATION • MASSILLON, OHIO

COUNT THE ROLLS • THE ROLLS COUNT

Tyson

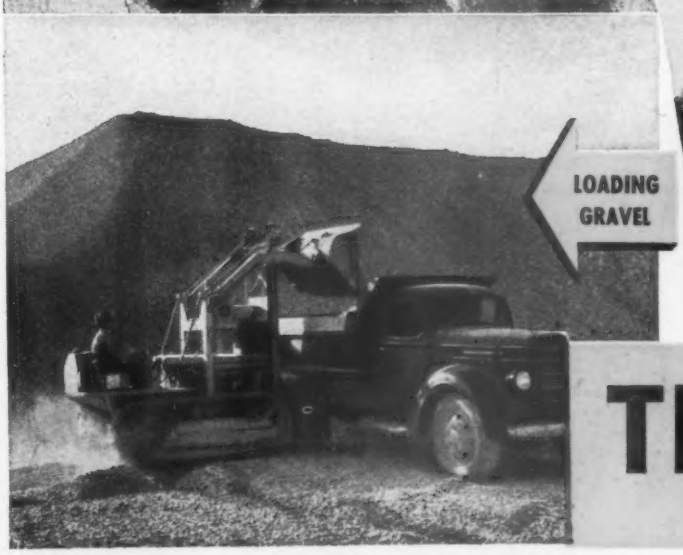
TODAY'S HEAVY-DUTY BEARING

★ BUY MORE WAR BONDS ★

TRAXCAVATE!

It's the MODERN Low-Cost, Material-Handling Method

TRAXCAVATORS, the dependable tractor shovels, are proving their ability, daily, to cut costs in quarries, pits and plants. They combine the usefulness of a shovel, loader, scraper, bulldozer, etc. . . . do tough digging work, load in the quarry or pit . . . strip overburden, carry and stockpile, maintain haulage roads, remove snow, do drawbar work. Bulldozer Blade and other attachments are available to further increase their usefulness. There's a choice of models, with bucket sizes from ½ to 2½ cubic yards—each one a balanced unit with the rugged "Caterpillar" track-type tractor by which it is powered. Learn how other operators are cutting costs with TRAXCAVATORS—write us for literature and data, and name of nearest Trackson-"Caterpillar" dealer. TRACKSON COMPANY, Milwaukee 1, Wisconsin.



TRAXCAVATOR

The Original Tractor Excavator

BE SURE YOUR NEXT PORTABLE COMPRESSOR

has all of these features

1. Multi-speed regulator which automatically adjusts the engine speed to the use of air and practically eliminates wasteful idling... reduces average working speed of compressor and engine, resulting in more efficient operation and longer life ...and with pressure characteristics that will get more work out of air tools. (On MOBIL-AIR compressors, this regulator is called the "Drill-More" regulator.)

2. Convertible engine... quickly changed from operation on one fuel to another (gasoline, oil, or natural gas) by substitution of external fuel accessories only.

3. If a gasoline engine, the most economical type... which will make substantial savings even with regular gasoline and at all loads.
Or if an oil engine, a low-compression type that is easily started and easily maintained.

4. A modern two-stage air-cooled compressor with Channel Valves.

5. Unified assembly of compressor and engine ...maintaining permanent alignment.

6. Light weight...but strong, sturdy, and tough.

7. Reasonable over-all dimensions.

8. Sturdy, easily operated and easily maintained clutch.

9. Electric cranking (for oil as well as gasoline engine) with commercial 6- or 12-volt equipment.

10. All operating controls and gauges centrally located.

11. Stream-lined design... for strength and durability.

12. Low, easily filled fuel tank.

13. Spring mounting and automotive steering if 210 cfm size or larger, 2-wheel trailer for all smaller sizes.

14. A fine, durable finish.

15. Proven design and performance.

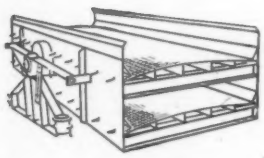
These features are built into MOBIL-AIR compressors... 5 sizes 105 to 500 cfm. These are the portables that decreased gasoline consumption as much as 40% compared to best previous models...and that established new records of endurance, reliability and low maintenance. Insist that your next portable is a MOBIL-AIR.

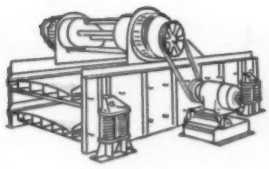
Ingersoll-Rand
11 BROADWAY, NEW YORK 4, N. Y.

2-435

You can order Materials Handling Machinery

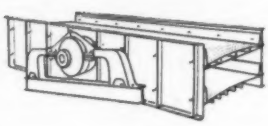
NOW!

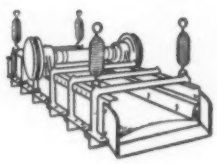




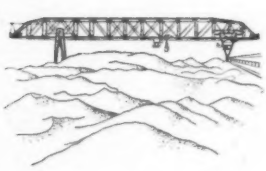
There's no doubt about it—the aggregates industries have "taken it on the chin." You have been producing in quantity to meet the pressure of wartime demands with your equipment operating overtime, thus hastening its obsolescence. Yet you have rarely been able to obtain priorities for new or replacement machinery.

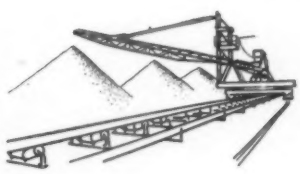
Tomorrow you may be faced with another and equally difficult problem. For when priorities are finally lifted, every user of heavy-duty machinery will pour in a flood of orders that will inevitably create a new output jam.





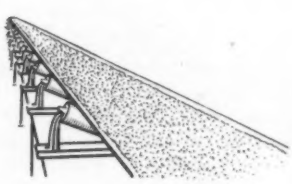
Fortunately you can eliminate much of these future delays—through the Robins Prior Preference Protection Plan. Under this 3-P plan you may now order Conveyors, Screens, Idlers, Pulleys, Belts, Screen Cloth—in fact any materials handling machinery that Robins makes.

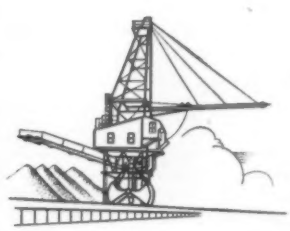


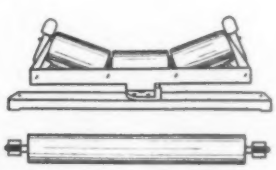


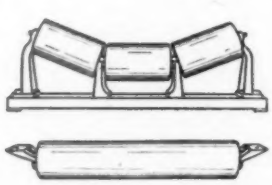
Your order will immediately be given a 3-P number and assigned a top position on Robins post-war manufacturing schedule. Robins will follow this schedule impartially, filling each order in turn the moment conditions permit.

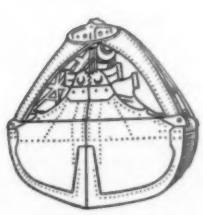
So check your equipment today. Consider carefully its wear, the parts needed for replacement, the units that must be added to enable you to meet post-war competition. Then rush your order to Robins, to assure a low number under the 3-P plan. And remember—the faster you act, the better your position on the delivery list. When writing, please address Dept. PQ-1.











ENGINEERS, MANUFACTURERS AND ERECTORS OF MATERIALS HANDLING MACHINERY

ROBINS *makes:* BELT CONVEYORS · COAL AND ORE BRIDGES · BUCKET ELEVATORS · CAR AND BARGE HAULS · CAR DUMPERS · CAR RETARDERS · CASTINGS · CHUTES · CONVEYOR IDLERS AND PULLEYS · CRUSHERS · FEEDERS · FOUNDRY SHAKEOUTS · GATES · GEARS · GRAB BUCKETS · PIVOTED BUCKET CONVEYORS · VIBRATING SCREENS · SCREEN CLOTH · SELF-UNLOADING BOAT MECHANISMS · SKIP HOISTS · STORAGE AND RECLAIMING MACHINES AND SYSTEMS · TAKEUPS · LOADING AND UNLOADING TOWERS · TRIPPERS · WEIGH LARRIES · WINCHES · WINDLASSES

ROBINS
CONVEYORS
INCORPORATED
Founded in 1896 as Robins Conveying Belt Co.
PASSAIC • NEW JERSEY

FOR MATERIAL AID IN MATERIALS HANDLING . . . . . . **It's ROBINS**

VALVE troubles result in excessive consumption of lubricating oil, rough running and stalling engines, hard starting. As a rule, most of these valve troubles are caused by mechanical difficulties, although some result from slow speed operation, permitting excessive deposits.

CHIEF CAUSES OF VALVE FAILURE

1. *Insufficient Tappet Clearance* . . . Correction lies in more frequent tappet inspection and accurate clearance adjustment.

2. *Valve Face or Seat off Center* . . . This trouble may result in heavy gum and coke deposits piling up on under side of valve head and forcing it off seat. Here correction lies in proper valve grinding, or replacement.

3. *Warped Valves* . . . Valves that are warped will apparently hang open at high speeds while clearing at idle. Reseating or replacement is only correction. Reducing abnormal temperatures will likely prevent repetition.

4. *Weak Springs* . . . Replace with springs meeting manufacturer's specifications for spring tension.

5. *Worn Valve Guides* . . . Guides become worn from dirt in air intake or oil resulting in coke or gum deposits that build up on valve stems because of excessive oil. This may be corrected by more frequent service of air cleaner or installing more efficient air cleaner; and replacement of worn guides.

6. *Deposits on Valve Seat* . . . This is the most frequent cause of leaky valves with consequent loss in power and fuel efficiency. Source of this trouble is usually heavy carbon or lead deposits in combustion chamber, very rarely from foreign matter within combustion chamber. Narrower valve seats and strong springs with more accurate grinding technique are remedies.

7. *High Temperature Exhaust* . . . Caused either by back pressure due to restricted exhaust system or poor carburetion or late timing. This condition results in warped valves and assists in building up varnish, lacquer, gum or deposits on valve stems, resulting in sticky and/or leaky valves. Cure is to clean out or replace muffler and tail pipe and improve combustion.

8. *Insufficient Cooling* . . . Caused by scale, rust or muddy deposits in water jackets; failure of water pump to deliver enough water; bad vanes in pump; slipping pump belt. In all cases cleansing or repairing of cooling system is called for.

MAIN CAUSES OF STICKY INTAKE VALVES

Intake valves rarely fail or burn because they are constantly cooled by incoming charge of air-fuel mixture. However, they do frequently stick, due to:

1. *Gum Content of Fuel too High* . . . Gum in fuel forms deposits around valve stem above guide and under valve head. To correct, change to fuel of proper specification.

2. *Worn Guides and Stems* . . . Since most of stem and guide wear is due to dirt and dust in air, remedy is more frequent service of air cleaner, or installation of larger capacity oil bath cleaner and, of course, replacement of worn guides and valves.

RING-FREE MOTOR OIL HELPS REDUCE VALVE TROUBLE

Correction of valve trouble is obviously a mechanic's problem. However, motor oil that penetrates fast—gets down around valve stems, and guides—reduces friction, and thereby prolongs life of valve. Macmillan Ring-Free Motor Oil has this quality of fast penetration. Furthermore, it is refined to withstand high engine temperatures. Ring-Free acts as a preventive for valve sticking, saving fuel consumption and costly repair bills.

FREE BOOKLET

Write today for copy of free pamphlet on "Sticky and Burned Valves—Causes and Preventions." Address—Macmillan Petroleum Corporation, Room 1014, 530 W. 6th Street, Los Angeles 14, Calif.

MACMILLAN RING-FREE MOTOR OIL

MACMILLAN RING-FREE MOTOR OIL

MACMILLAN PETROLEUM CORPORATION—50 WEST 50TH STREET, NEW YORK 20 • 624 SOUTH MICHIGAN AVENUE, CHICAGO 5 • 530 WEST SIXTH STREET, LOS ANGELES 14 • COPYRIGHT 1944, MACMILLAN PETROLEUM CORPORATION

Superior Diesel performance has always exceeded the claims made for it

SUPERIOR DIESELS • STATIONARY, 28 to 1325 H. P.
MARINE, 28 to 1325 H. P. • GENERATOR SETS, 20 to 928 kw.

Superior **ENGINES**
Division of
THE NATIONAL SUPPLY CO.
General Sales Office:
Springfield, Ohio

Drive efficiently with Wood's

Power is a primary need in all war plants today . . . it must not be wasted through the use of inefficient, power-consuming transmission equipment. To achieve peak production, apply Wood's Planned Power Transmission. It will provide maximum delivery of generated power to the machines, without unnecessary shut-downs and with minimum maintenance. The 87 years experience Wood's has had in developing, designing, manufacturing and applying power transmission equipment is your assurance of satisfaction. Tell us your problems . . . or call one of the many conveniently located Wood's distributors.

EVERYTHING IN TRANSMISSION
BEARINGS · COLLARS · CLUTCHES · COUPLINGS
CONTACTORS · HANGERS · PILLOW BLOCKS
PULLEYS · V-BELT SHEAVES AND COMPLETE DRIVES

the LONG LIFE LINE

POWER
TRANSMISSION
EQUIPMENT

T. B. WOOD'S SONS COMPANY
CHAMBERSBURG, PA.

387-391 Atlantic Ave., Boston, Mass. · 94 Plane St., Newark, N. J. · 425 First Ave., Pittsburgh, Pa.

How LeTourneau Equipment

SPEEDS STRIPPING AND MATERIALS-HANDLING

TRY THESE APPLICATIONS TO SAVE TIME AND MANPOWER ON YOUR WORK

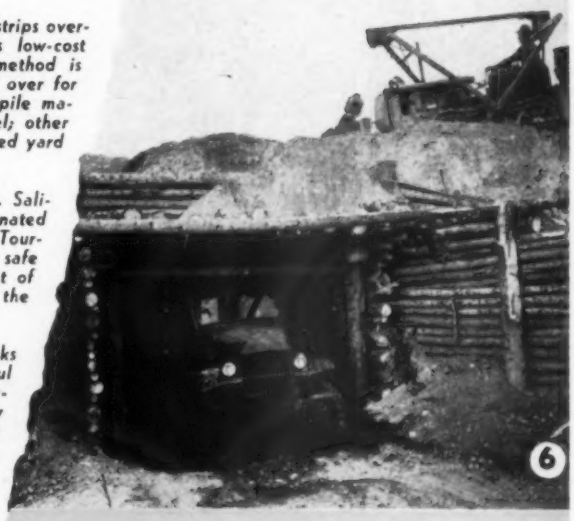
Four Super C Tournapulls stripping 85 feet of overburden for Attapulgus Clay Company, near Amsterdam, Ga., make one-mile round trips of load, haul and spread every 11 minutes. These big rubber-tired, 150 h.p. rigs, with their 15 heaped yard Carryall Scrapers travel 14.9 m.p.h. . . . give you scraper earthmoving economies over truck distances.

Two Tournatrailers—17-yard, heaped capacity, end dump hauling units—speed long-distance hauling of rocky overburden from shovel in LaClede Christy Clay Company's pit, near Wellsville, Mo. Tournatrailers operate from same fast-moving Super C Tournapull prime mover and Power Control Unit used with Carryall Scrapers and Tournacranes . . . all three are quickly interchangeable.

Tournacrane loads 2 to 5-ton rocks onto trucks, unloads and erects steel for new buildings, moves and assembles heavy machinery for a big western U. S. mining company. Tournacranes, with their lifting capacities up to 50,000 lbs; 8 to 21-foot reach; 20 to 40-foot lift, gives you powerful truck crane service. Will travel carrying maximum loads.

LeTourneau Carryall Scraper strips overburden from mica deposits in Brazil. This low-cost LeTourneau Carryall Scraper earthmoving method is widely used by mining companies the world over for stripping, to build and maintain roads, stockpile materials, etc. Shown is 15 heaped yard model; other LeTourneau Carryalls range from 4 to 42 heaped yard capacities.

LeTourneau Rooter—Here's how the Cia. Salitrera Anglo-Chilena, near Antofagasta, Chile, eliminated dangerous blasting of hard-packed nitrate. Its LeTourneau Rooter broke the stockpiled material fast, safe and at low cost; LeTourneau Dozer used on front of the same tractor shoved the broken nitrate to the loading area.



LeTourneau Dozer loads gravel into trucks on Alcan Highway. Next time you've got a long haul job that can't wait, or you're in a remote spot inaccessible to heavy shovels, you can load trucks fast by using LeTourneau Dozers or Carryall Scrapers with easily-built loading ramps and grizzlies. Try it!

Like scores of other pit and quarry operators, you'll find, too, that LeTourneau high-speed, heavy-duty equipment will help you do these and many more materials-handling jobs fast and at lowest cost.

HERE'S OPERATION AND JOB APPLICATION HELP

You can get helpful information from the LeTourneau Co-Operator on the most practical operating, service and repair practices. Published 10 times yearly . . . read regularly by over 50,000 pit and quarry operators, miners, contractors, loggers and others who operate LeTourneau equipment . . . the Co-Operator is FREE to you and your men. Write for your copies TODAY—address: R. G. LeTourneau, Inc., Dept. PQ-145, Peoria, Illinois.

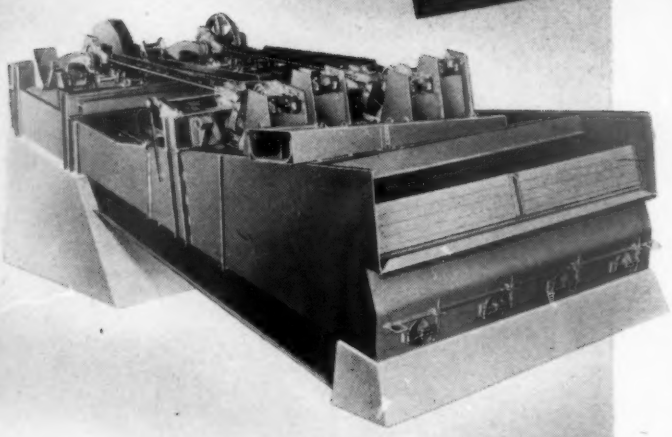
LETOURNEAU

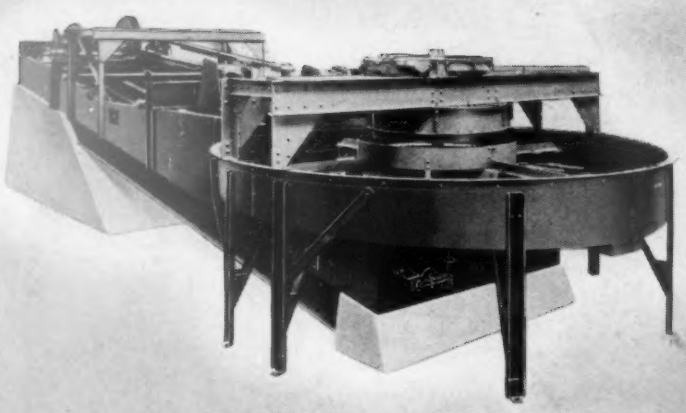
PEORIA, ILLINOIS • STOCKTON, CALIFORNIA

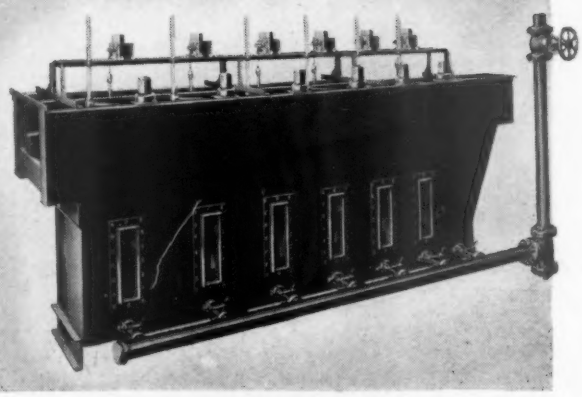
Manufacturers of TOURNAPULLS*, ANGLEDOZERS*, BULLDOZERS, TILT-DOZERS*, CARRYALL* SCRAPERS, POWER CONTROL UNITS, ROOTERS*, TOURNATRAILERS*, TOURNACRANES*, TOURNATRUCKS*, SHEEP'S FOOT ROLLERS, TOURNAROPE*, TOURNAWELD*, TOURNALIFTS*.

*Trade Mark Reg. U. S. Pat. Off.

Here's how you can get TOP Specification Sand







When job requirements demand a uniform and special size, grade, or type of sand . . . when sand of a special quality is essential for particular purposes . . . when only sand that meets certain exacting specifications will be acceptable . . . then you need the efficient processing equipment developed by DORR Engineers from their years of experience doing pioneer work in this and similar fields.

THE DORRCO SYSTEM is designed to meet the needs of both large and small sand and gravel beds. Equipment using the smaller DORR units may be installed for commercial sand and gravel operations of 25 tons an hour and they will process with the same high standard of performance as the larger DORR units which are used in bigger operations handling up to 3,000 tons per hour.

Plan NOW to make low grade sand and gravel beds yield top specification sands of all types and uniform sizes by using the various combinations of DORR equipment. A DORR Engineer will be glad to explain what the DORR System will do and how it will work under your own particular conditions.

Write for—*"Making Prescription Sand at 50 tons an Hour"*—it will be mailed promptly to you, upon request.

DORRCO

THE DORR COMPANY, ENGINEERS

NEW YORK 22, N. Y. . . . 570 LEXINGTON AVE.
ATLANTA 3, GA. . . . WILLIAM-OLIVER BLDG.
TORONTO 1, ONT. . . . . 80 RICHMOND ST. W.
CHICAGO 1, ILL. . . . . 221 NO. LA SALLE ST.
DENVER 2, COLO. . . . . COOPER BUILDING
LOS ANGELES 14, CAL. . . . . 811 WEST 7TH ST.

RESEARCH AND TESTING LABORATORIES
WESTPORT, CONN.

SUGAR PROCESSING
PETREE & DORR DIVISION
570 LEXINGTON AVE., NEW YORK 22

DORR

RESEARCH ENGINEERING EQUIPMENT

ADDRESS ALL INQUIRIES TO OUR NEAREST OFFICE

MACHINERY FOR
CEMENT—LIME—ORES

F. L. SMIDTH & CO. Manufacture the following Complete Line of Modern Machinery for Cement, Lime and Allied Materials, the Sintering of Ores, etc.

UNIDAN multi-compartment grinding mill.
UNIKOM multi-compartment grinding mill.
KOMINUTER for wet and dry grinding.
BALLMILL for granulating.
TUBEMILL for wet and dry pulverizing.
TRIX for grading wet granulated material.
TIRAX MILL for drying and grinding.
ATOX, air swept, vertical shaft pulverizer.
PYRATOR for drying and grinding.
SPRAY CASINGS for pulverizers.
CYLPEBS metallic grinding bodies.
DRAGPEB metal lining for pulverizers.
SILEX flint liners for pulverizers.
FLINT PEBBLES for pulverizers.
AIR SEPARATORS and Cyclones.
AGITATORS for mixing and storing wet mix.
AIR DISTRIBUTORS for slurry tanks.
WASHMILL for disintegrating and mixing materials in water.

ROTARY KILNS for cement, lime, ores, etc.
UNAX KILNS, with integral cooler.
SUCTION GRATE ROTARY KILN.
ROTARY KILNS—Sintering and roasting.
PRE-HEATERS for rotary kilns.
UNAX COOLERS, cooling drums on kiln.
UNAX GRATE COOLER, air quenching.
COOLERS, rotary pressure coolers.
UNAX PRE-COOLER.
F.L.S. MULTI-TUBE ROTARY COOLER.
F.L.S. INCLINED GRATE COOLER.
COOLERS, Cement, Ores, etc.
CHAIN SYSTEM for wet kilns.
HEAT EXCHANGERS for dry kilns.
KILN CONTROL, electrical.
GAS ANALYZER, electrical.
KILN EQUIPMENT, fans, hoods, dampers, spouts, airseals, dust chambers, multiple gas discharge.

FLUXO PACKER for filling bags.
FLUXO PUMP for pneumatic transport.
EXBINER for discharging bulk cement.
EXTRACTORS, cement from silos.
SKIPULTER shaker conveyor.
CYLCUP distributing conveyor.
PNEUMATIC FEEDERS.
SLURRY FEEDERS for kilns and mills.
CRADLE FEEDERS for coal, rock, clinker.
TABLE FEEDERS for coal, rock, clinker.
COAL FEEDERS for rotary kilns.
COAL BURNERS for rotary kilns.
GAS BURNERS for rotary kilns.
OIL BURNING EQUIPMENT for kilns.
SYMETRO Drive, speed reduction units.
LENIX short center belt drive.
PUMPS for heavy liquids as cement slurry.
FLOURMETER for determining micron sizes in finely ground cement, etc.

PLANT ENGINEERING

F. L. Smidth & Co. are also engineer specialists in designing and equipping factories for making Portland cement and other allied materials, having devoted their efforts along these lines for a period of fifty years.

Their engineering services include all stages of the project from the preliminary investigation of the site and raw material deposits, chemical and physical tests of the raw materials and finished product, to all necessary drawings and specifications for erecting and equipping all departments of the plant, including also the electrical engineering.

POST WAR MODERNIZATION

This service applies equally well to complete new plants or any special department of a plant—to revisions or conversions of existing plants—making standard Portland cement, slag cements, white cement, or for making special high early strength cements, such as "VELO."

F. L. SMIDTH & CO.

60 EAST 42nd STREET NEW YORK 17, N. Y.

THREE OUTSTANDING DEVELOPMENTS:

The Vanderwerp Recuperator for Rotary Kilns

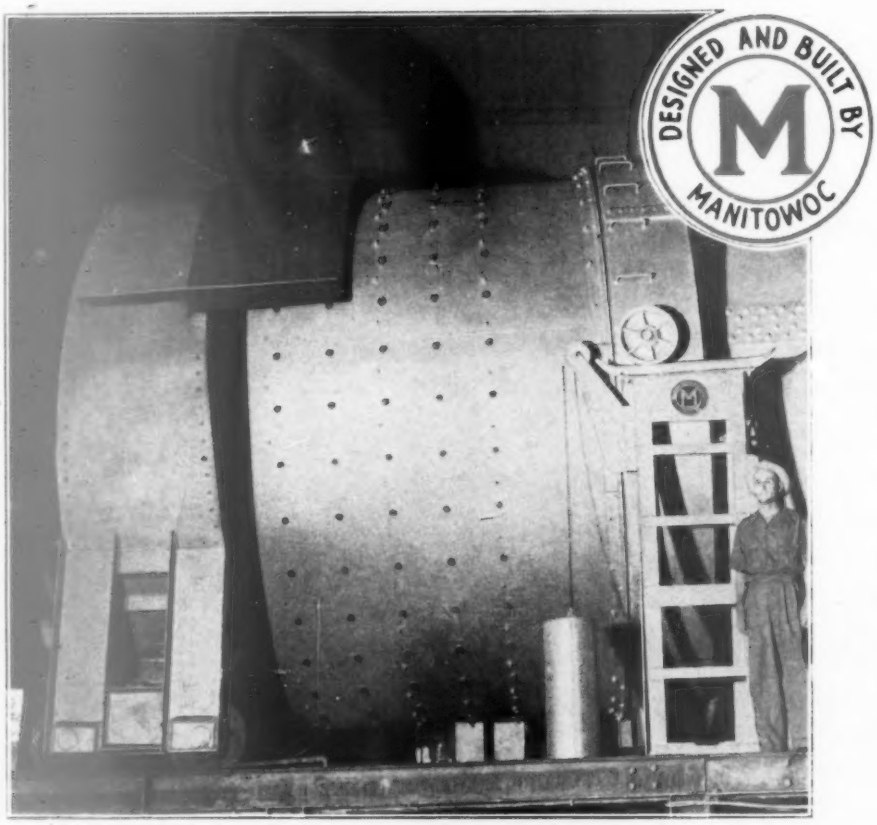
Insures immediate air quenching and maximum heat recovery.

The Minogue Slurry Agitator

Provides thorough agitation and blending with minimum power and air consumption.

The Minogue Kiln Feeder

The only practical device for introducing flue dust in the dry state.



Vanderwerp Type S Recuperator applied to Unit-Fired Rotary Cement Kiln 11 ft. x 400 ft. (Repeat Order)

The wide acceptance of the Vanderwerp Recuperator in the United States has led to important installations in South America, Australia and the Phillipines.

The demand for units of high capacity has resulted in our Type S design suited to kilns of maximum output. In all cases the Recuperators may be readily attached to an existing kiln, requiring the minimum of labor in erection, involving no foundations or brickwork and occupying minimum floor space.

MANITOWOC ENGINEERING WORKS

Division of

GENERAL OFFICES AND PLANT
Manitowoc, Wisconsin

Manitowoc Ship Building Company

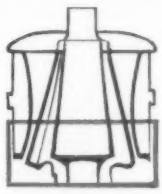
CHICAGO OFFICE
131 E. Wacker Drive

ONLY ROLL CRUSHERS GIVE FULL MANGANESE LIFE

JAW CRUSHER

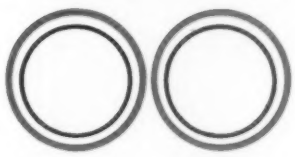
The wear all comes here.

GYRATORY CRUSHER

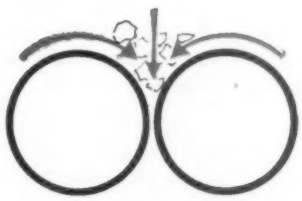


The wear all comes here.

ROLL CRUSHER



The wear is evenly distributed around the entire surface of both shells.



They all travel together in the same direction and at the same speed.

HERE IS WHY: In other types of crushers about 10% of the manganese area does all the work. Accordingly only 10% of your investment in manganese is producing. When the lower edges are worn you scrap 90% of your manganese plate.

IN THE ROLL CRUSHER 100% of your manganese does the work because as the shells turn, the work and the wear is evenly distributed over the entire surface of the shells. Accordingly 100% of your investment in manganese is producing.

AND ROLL CRUSHERS GIVE LONGER MANGANESE LIFE!

IN the modern Pioneer Roll Crusher both shells are driven at the same speed and the material passes between them at the same speed. Consequently there is no grinding action to cause unnecessary wear. The crushing action of the rolls and the flow of materials is uniform, steady and constant.

For complete information on Pioneer Roll Crushers, write for this book today. There may be a post-war spot for these highly efficient units.

PLAN WITH

Pioneer
ENGINEERING WORKS

Jaw Crushers • Roll Crushers • Screens • Conveyors • Feeders • Washers

MINNEAPOLIS 13, MINNESOTA

FOR PROFITABLE PRODUCTION

BUILT TO BETTER

Installation of six Fuller Air-Quenching Inclined-Grate Coolers in a cement plant.

FULLER
AIR-QUENCHING
INCLINED-GRATE
COOLER

The Fuller Air-Quenching Inclined-Grate Cooler was conceived, designed and built by engineers having years of experience in the cement industry. They knew the problems of the industry and what was needed. With this experience and knowledge they set out to build, not just another cooler, but one that would actually meet desired requirements in a highly satisfactory manner.

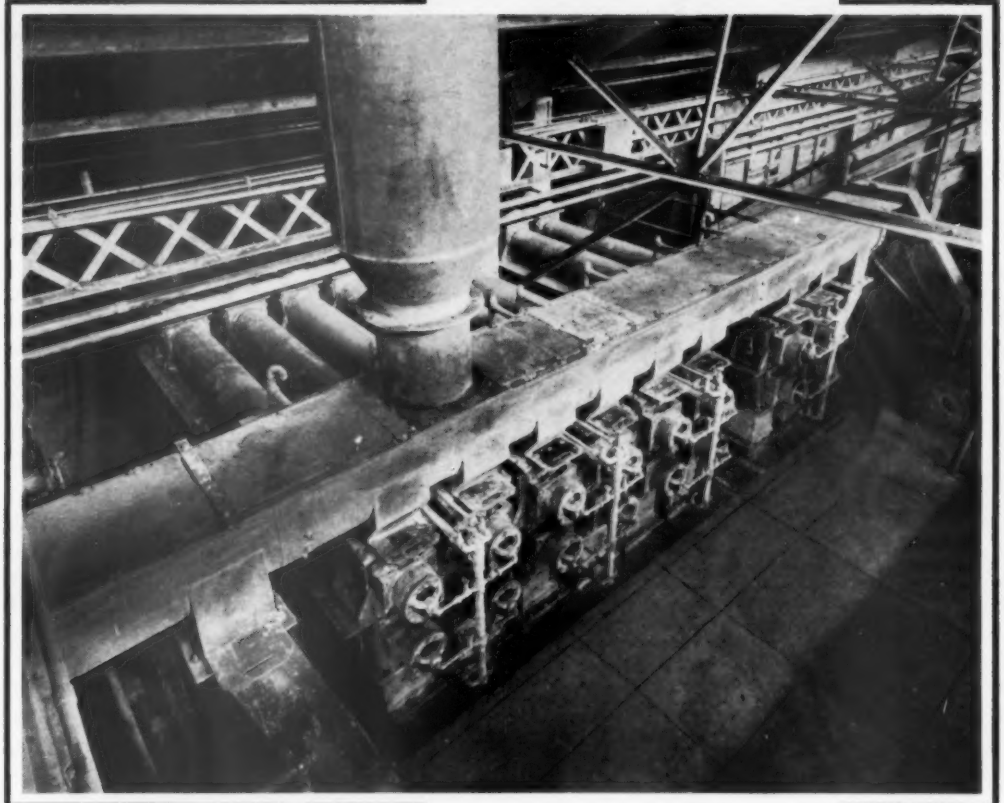
This determination has had its just reward, for over 100 coolers have now been sold, a great majority of which have already been put into successful operation.

This cooler has many outstanding qualities not to be found in any other cooler now being offered the industry. Bulletin CO-3 fully illustrates and describes various applications of the cooler, together with important advantages to be gained through the use of this equipment. Write for your copy now . . . it will be sent you promptly.

FULLER COMPANY

FULLER-KINYON, FULLER-FLUXO AND THE AIRVEYOR CONVEYING SYSTEMS . . . ROTARY FEEDERS AND DISCHARGE GATES . . . ROTARY AIR COMPRESSORS AND VACUUM PUMPS . . . AIR-QUENCHING INCLINED-GRATE COOLERS . . . DRY PULVERIZED-MATERIAL COOLER . . . AERATION UNITS . . . MATERIAL-LEVEL INDICATORS . . . MOTION SAFETY SWITCH . . . SLURRY VALVES . . . SAMPLERS

R YOUR COOLING



Eight-unit Fuller Dry Pulverized-Material Cooler installation. Capacity 400 barrels finished Portland cement per hour.

The Fuller Dry Pulverized-Material Cooler was developed and built primarily for the purpose of cooling finished Portland cement and to meet specifications of state highway departments and other users. Also for the elimination of difficulties encountered in storing and packing hot materials.

Installations have now been in successful operation over an extended period in the cement and chemical-process industries.

The cooler is simple in design, efficient, low in power consumption and maintenance. Each cooler unit is entirely independent of the other. One or more units may be shut down for inspection or repairs without affecting the operation of the other units. Internal mechanism is readily accessible.

Bulletin PMC-1 fully illustrates and describes this equipment. We'll be glad to send you a copy on request.

FULLER
DRY
PULVERIZED-MATERIAL
COOLER

G-39T

FULLER COMPANY

CATASAUQUA—PENNSYLVANIA

CHICAGO, 3
Marquette Bldg.

WASHINGTON, 5, D. C.
Colorado Bldg.

SAN FRANCISCO, 4
Chancery Bldg.

RAYMOND

Modern Production

RAYMOND Roller Mill with cut-away section to show the double whizzer separator, operated by individual motor through variable speed transmission.

GRINDING

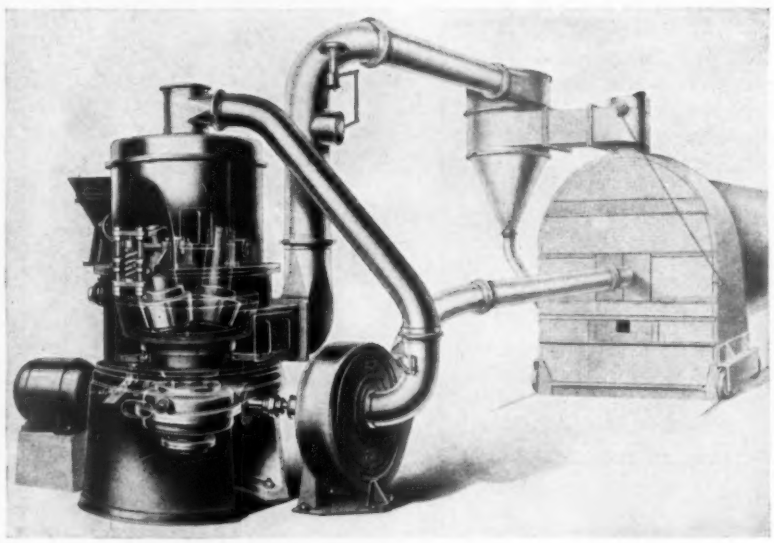
Lower your reduction cost in 1945 with Raymond pulverizing and air separating machinery.

This modern Raymond High-Side Roller Mill with double whizzer separator comes first for finish grinding operations where close product control and large output go together.

Wide range of classification, from 80% minus 100-mesh to 99.99% passing 325-mesh, easily regulated by changing speed of revolving whizzer.

Pneumatic feed control maintains a maximum "load" on mill, insuring a high tonnage per horse-power. Raymond oil journals show definite savings in lubricating and overall maintenance costs.

Use this mill for economical handling of limestone fillers, barytes, various clays, bauxite, magnesite, chemicals, pigments and many other non-metallic minerals and manufactured products.



FIRING

RAYMOND Bowl Mill
for pulverizing coal and direct-firing rotary kilns

The Raymond Bowl Mill is the modern direct-firing unit for cement, lime, dolomite and magnesite kilns. Handles any grade or moisture coal. Maintains uniform grind. Gives maximum lime-fuel ratio. Wide flexibility in control . . . high availability . . . full range of capacities. Noiseless, vibrationless, dustless operation.

SINCE 1887

Write for Raymond Catalogs, mentioning type of equipment.

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING CO., Inc.

of Non-Metallics

EQUIPMENT

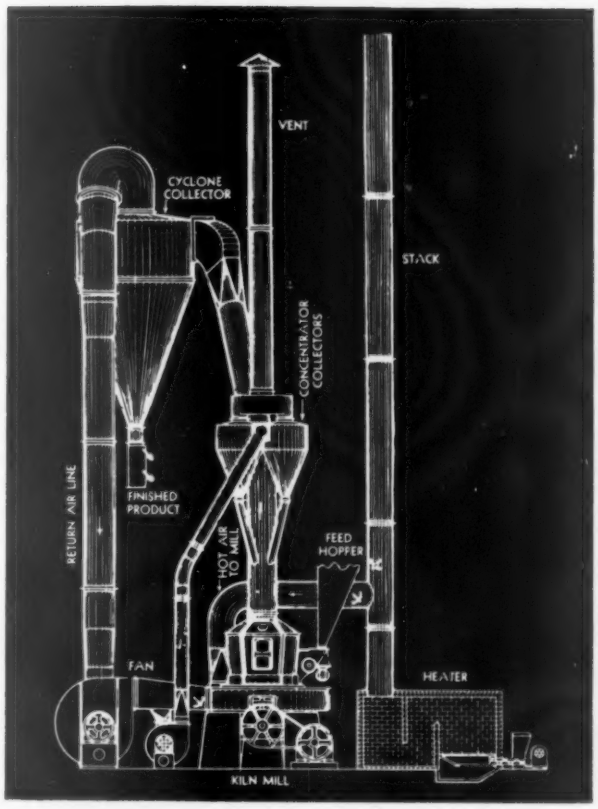
DRYING

Diagram shows the Raymond Low Side Roller Mill, equipped with air-drying system for removing surface moisture while pulverizing such materials as limestone, raw gypsum rock and other newly mined materials.

On limestone containing 4% to 10% of initial moisture, the mill drying system will reduce the moisture content to less than one-half of 1% while grinding the product to 100-mesh fineness.

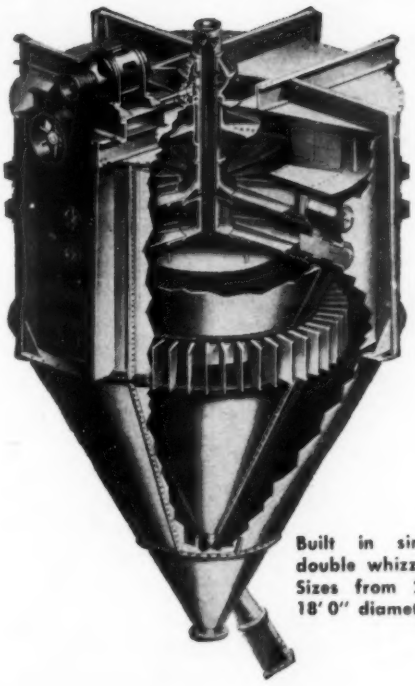
The Raymond Low Side Roller Mill with the standard air separating system is widely used for grinding phosphate rock for acid phosphate fertilizer, and agricultural limestone for soil liming purposes.

For further details, see Catalog #34.



SEPARATING

Raymond Mechanical Air Separators with patented whizzer, single or double type, are efficient units for closed circuit grinding operations with tube mills, ball mills, and other pulverizers which do not produce a product of high enough fineness or uniformity. Close separation of the fines, cleaner tailings and high capacities are obtained with the unique whizzer action.



Built in single or double whizzer type. Sizes from 2' 6" to 18' 0" diameter.

TESTING

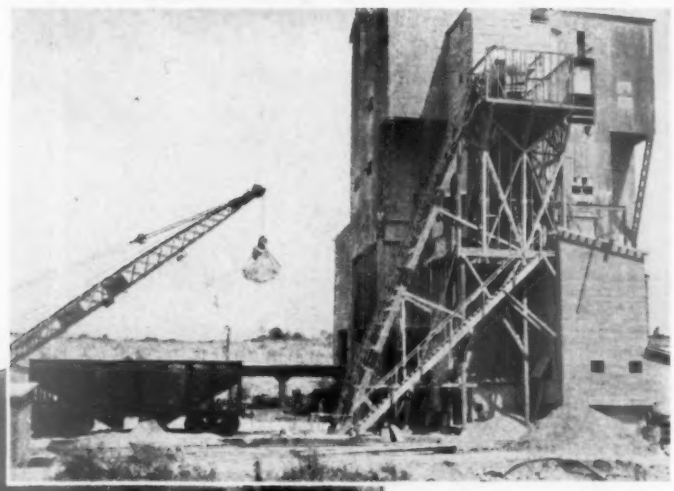
Raymond 10" Laboratory Separator is a useful small capacity unit for classifying test samples for production control. Bulletin #53.

1321 North Branch St., CHICAGO 22, ILL.

Sales Offices in Principal Cities

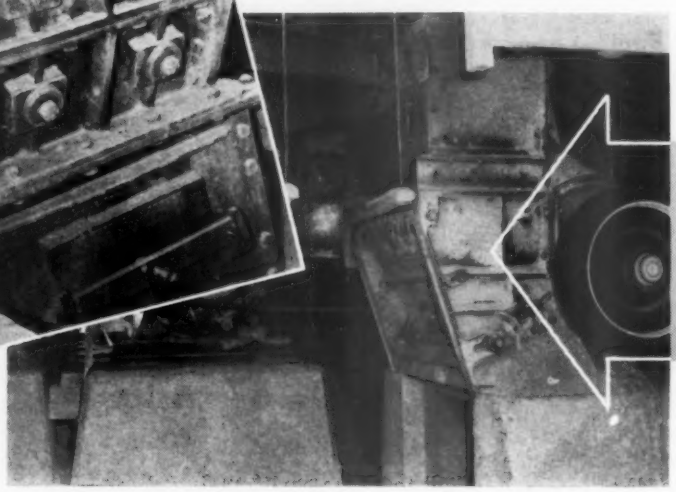
Canada: Combustion Engineering Corporation, Ltd., Montreal

EXPANDING AGSTONE PRODUCTION WITH AMERICAN CRUSHERS



THE PLANT
COLUMBIA QUARRY CO.
Krause, Ill.

At left: American type ACS-3 Crusher with Synchron vibrating feeder. Below: American type 3040 Crusher with Synchron feeder and 75 HP motor.



AND THE CRUSHERS ARE *ALL* AMERICAN

Now another AMERICAN Crusher has been added to this agricultural limestone plant, boosting Columbia's output to 3200 tons per day.

This is the third successive installation of AMERICAN Crushers that Columbia Quarry Company has made for building up production efficiency to meet today's increased demands.

"AMERICANS" are capable of producing any size material from graded stone sand and agricultural limestone to coarse aggregates.

On this job, all three Crushers are delivering finely crushed stone to the screening plant for 3/8" and minus 1/4" mesh material as the demand requires. Dependable, economical performance is the reason why Columbia has standardized on "AMERICANS" exclusively.

AMERICAN Crushers are furnished in capacities from 10 to 100 tons per hour of uniform product.

Write for details and prices.

AMERICAN PULVERIZER COMPANY
1059 MACKLIND AVE.
ST. LOUIS, MO.

Nitro Starch Base

HIGH EXPLOSIVE EFFICIENCY

IN MINING · QUARRYING · LOGGING · CONSTRUCTION

PLUS THREE ADVANTAGES FOR YOU!

● America's fists are swinging with ever-increasing power. We are proud that Trojan Explosives are helping our fighters shorten the road to Victory. But, we shall be grateful, indeed, when the power of Trojan again can be turned fully to its intended purposes of building and development.

BUY BONDS!

● **WILL NOT PRODUCE HEADACHES** from handling . . . reduces discomfort from breathing muck pile fumes. Better working conditions for you and your men!

● **WILL NOT FREEZE** or leak at Arctic or Tropic temperatures. Maintained high efficiency . . . anywhere anytime!

● **WITHSTANDS IMPACT** in high-powered Rifle Bullet Test. Greater safety for workers!

EXPLOSIVES 1905 TROJAN 1944 CHEMICALS

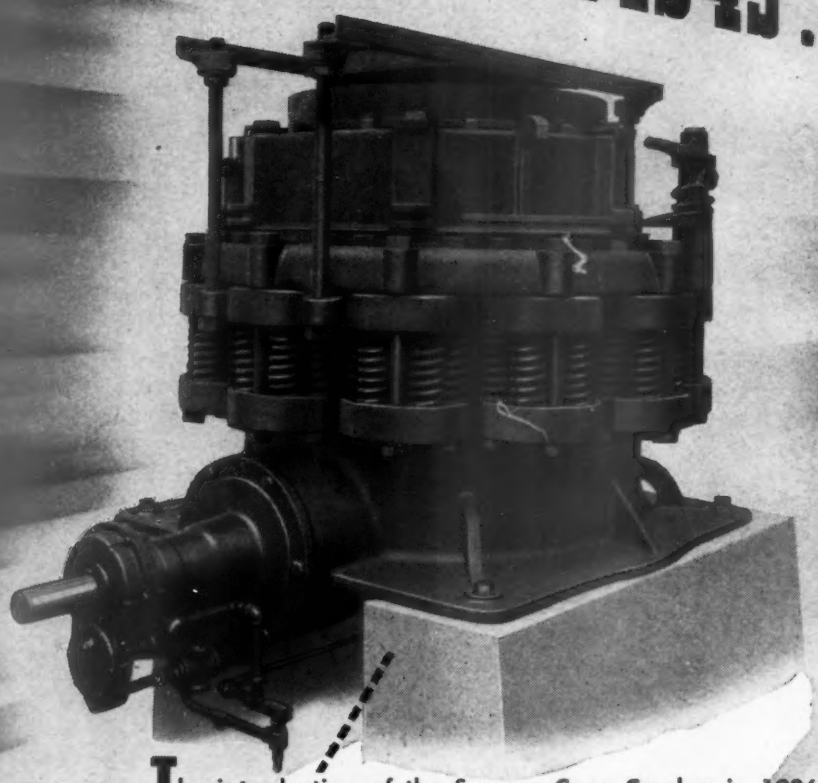
POWDER COMPANY

ONE OF AMERICA'S OLDEST HIGH EXPLOSIVES MANUFACTURERS

PLANTS: SEIPLE, PA. • ROBERT, CAL. • MAGAZINES STRATEGICALLY LOCATED THROUGHOUT THE NATION

OFFICES: ALLENTOWN, PA. • SAN FRANCISCO, CAL. • LOS ANGELES, CAL. • PORTLAND, ORE. • NEW YORK, N.Y.

A Leader in 1926 .... Still a Leader in 1945 .....



The introduction of the Symons Cone Crusher in 1926 marked a new era in fine crushing operations. The revolutionary process of crushing of the cone was the greatest advancement ever made in the field of reduction crushing. No other type of crushing machinery ever received such ready acceptance. Its rapid and widespread use is unparalleled by any type of crushing equipment.

Today it is still the world's outstanding reduction crusher and is universally used by leading producers whose operations involve fine crushing. Continued improvements have been made to meet growing trends toward greater use of more finely crushed materials. Many early users of Symons Standard Cones have now installed Symons Short Head Cones to meet these changing demands. There are thousands of Cones now in service.

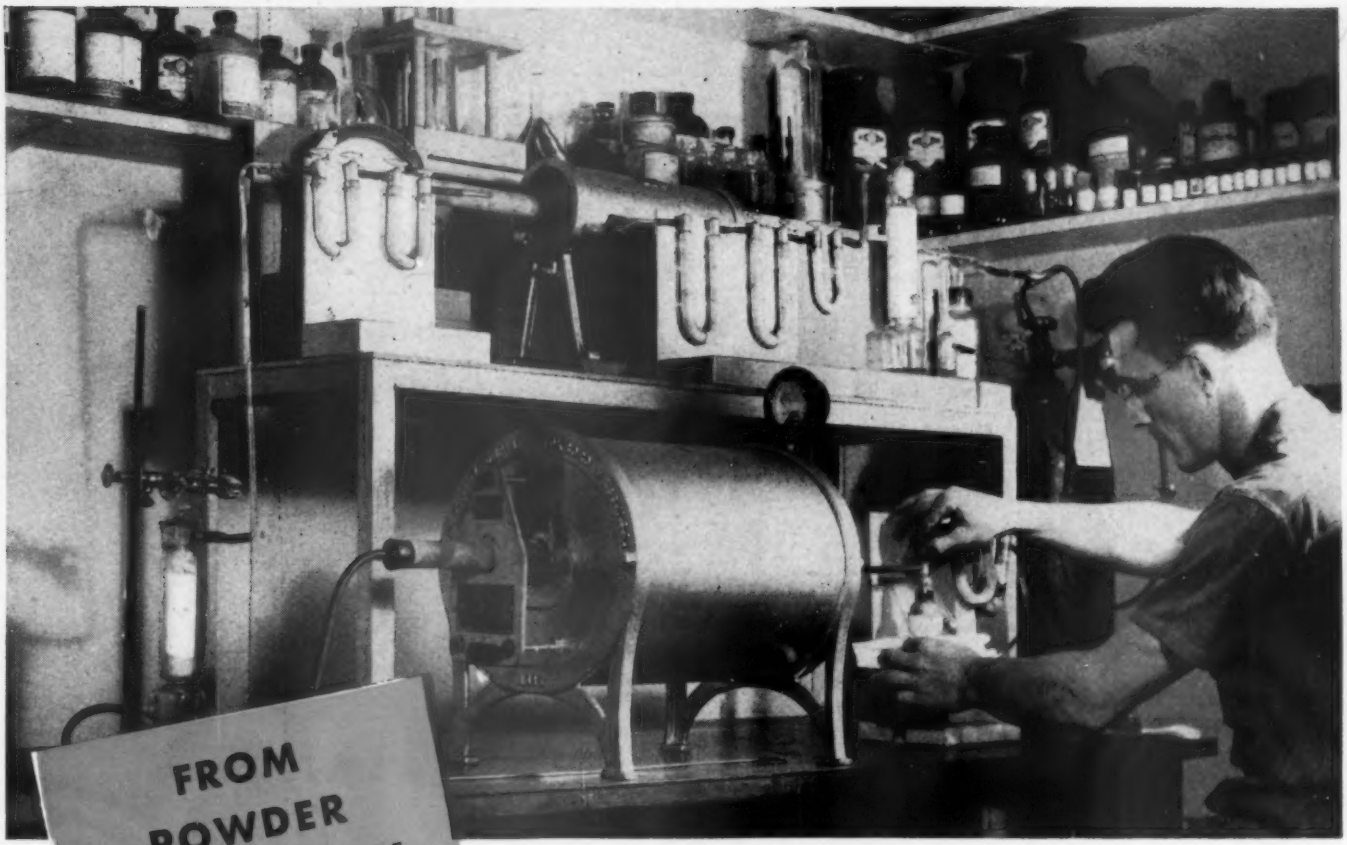
If your postwar planning includes increased output of the finer sizes, investigate the advantages of Symons Cones. Their selection for modern crushing plants everywhere is evidence of their satisfactory performance.

NORDBERG MFG. CO.
MILWAUKEE 7, WISCONSIN

NEW YORK · LOS ANGELES · LONDON · TORONTO

NORDBERG MACHINERY

SYMONS CONE CRUSHERS



This unique apparatus, developed in The S. K. Wellman Company laboratories, measures minute quantities of oxygen in powder metal formulas.

FROM POWDER METALLURGY HEADQUARTERS

. . . come better friction materials

● In the world's largest laboratory devoted to friction materials, we are constantly finding ways to produce *better* clutch facings and brake linings. That's why Velvetouch has established so many enviable records for long wear and smooth operation in all types of earth-moving equipment. If you have not recently used Velvetouch, specify this all-metal friction material for your next brake or clutch overhaul.

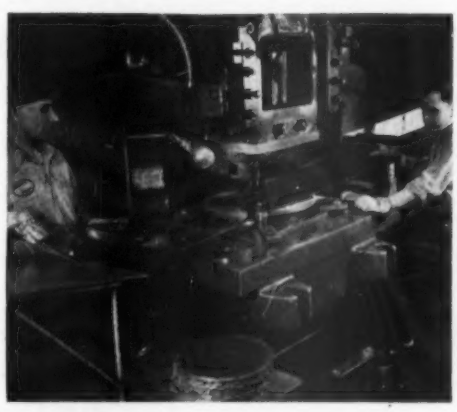
THE S. K. WELLMAN COMPANY

1374 EAST 51st STREET • • CLEVELAND 3, OHIO

Velvetouch is *all metal*—a combination of powdered metals, compressed, sintered and welded to a solid steel backing.

For Brake and Clutch . . . Use Velvetouch

The "INSIDE STORY" of POWDER METALLURGY



CHAPTER II. For maximum strength and heat conductivity, the powdered metal friction materials are firmly bonded to steel backing plates. Photo above shows steel "cores" being stamped out for Velvetouch facings.

It pays to be a Bemis Multiwall paper bag Customer

EVEN though direct government purchases have taken a considerable part of our multiwall paper bag production this year, Bemis customers have not suffered . . . they have been supplied on the basis of past purchases, even in the face of the labor shortage and no increase in facilities.

Naturally, the demand for Multiwalls has been greater than the supply. Much as we regret inability to fill all orders, we have felt a responsibility to take care of our regular customers first. Fortunately, we've been able to do that—and right on schedule. If it's humanly possible, we'll keep on maintaining this service.

War or peace, we want our customers to feel that it pays to be Bemis customers.

NORTH
WEST EAST
SOUTH

A major reason we've been able to supply our Multiwall customers is the size and flexibility of our production facilities.

Bemis Multiwall Plants at

PEORIA, ILL.
EAST PEPPERELL, MASS.
MOBILE, ALA.
SAN FRANCISCO, CALIF.
WILMINGTON, CALIF.
ST. HELENS, ORE.

These plants not only give us large production, but also quick accessibility to all parts of the country.

BEMIS BRO. BAG CO. Baltimore • Boston • Brooklyn Buffalo • Charlotte • Chicago Denver • Detroit • Houston • Indianapolis • Kansas City • Los Angeles • Louisville Memphis • Minneapolis • New Orleans • New York City • Norfolk • Oklahoma City • Omaha St. Louis • Salina • Salt Lake City • Seattle • Wichita

Ewing Galloway Photo

AMERICA IS

Built with Aggregate!

MIAMI

The Highway That goes to sea...

KEY WEST

Stretching apparently endlessly out to sea runs the Key West Highway Viaduct, one of the world's great engineering feats. Every foot of its more than one hundred and thirty miles is strong enough to withstand nature's most destructive forces because it's built primarily of aggregate.

On highways, airports, dams and other permanent structures which also require enormous quantities of aggregate, the difference of even a few cents per ton in material costs becomes highly important. Because of this, Iowa engineers are constantly striving to improve the Cedarapids line to provide every possible advantage for its users to produce better products at still lower cost.

No matter what kind of a job you are supplying material for you'll profit more by using Cedarapids equipment. Iowa is known everywhere as headquarters for aggregate producing and crushing equipment and asphalt plants.

Cedarapids

Built by IOWA

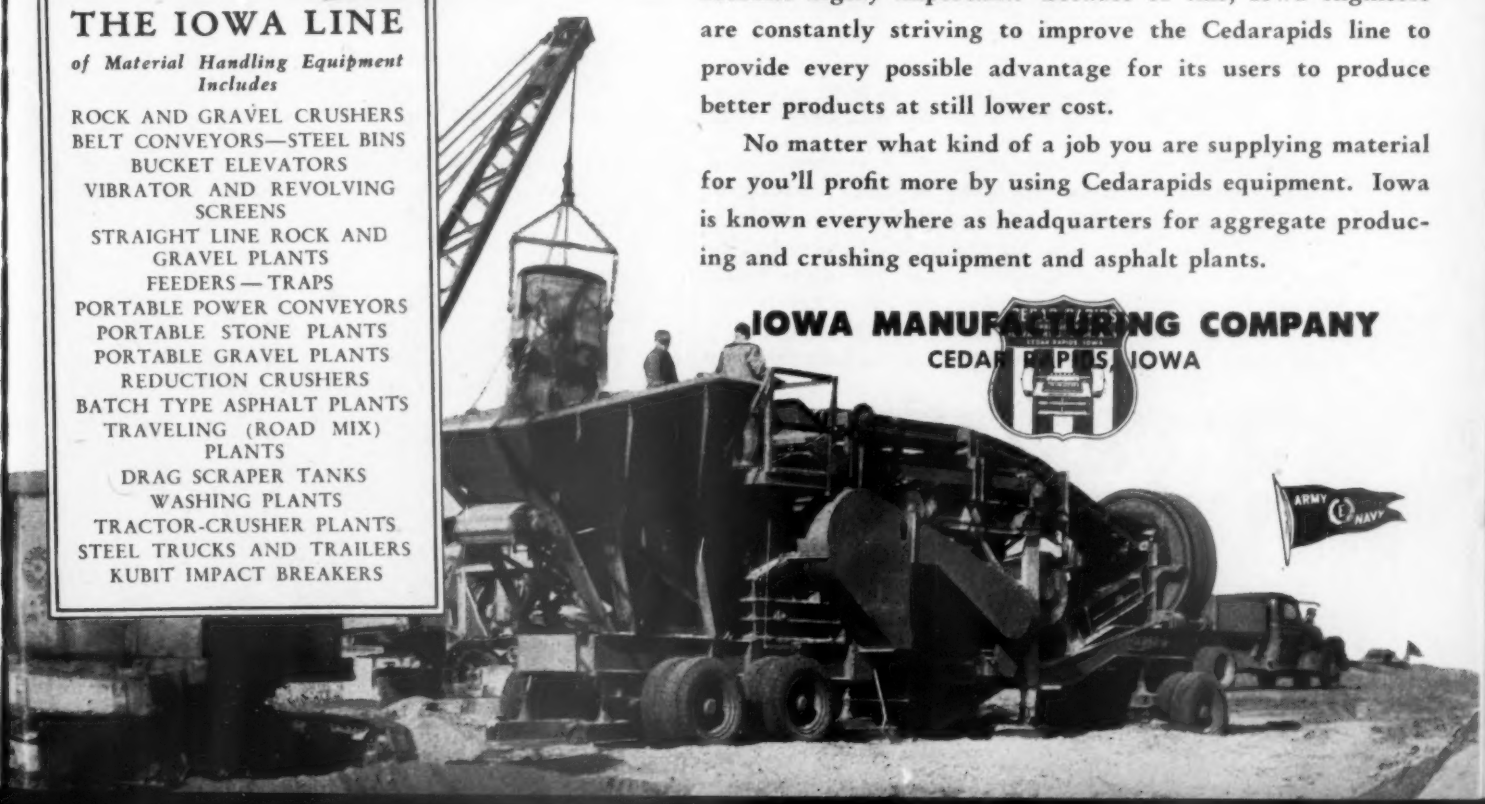
THE IOWA LINE

of Material Handling Equipment Includes

ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS—STEEL BINS
BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS
FEEDERS — TRAPS
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS

IOWA MANUFACTURING COMPANY

CEDAR RAPIDS, IOWA



Uniform MOISTURE

In Washed Sand for Concrete

CUTS TIME & COST

in mixing

CONTROL MOISTURE

with AKINS *Classifiers*

TO MAKE BETTER CONCRETE

Variation of moisture content in cement sand either causes variation in tests or adds more time for mixing. Cement contractors want neither. AKINS Classifiers are mechanically adapted to maintain moisture uniformity and are especially suited to washing sands to close separation, as in glass making . . . Unloading is unnecessary to start after shutdown,— an important advantage in plants which do not operate 24 hours a day . . . Considering their high tonnage output, power requirements are very low.

Let us work with you in planning for post-war business. There's going to be plenty of it SOON.

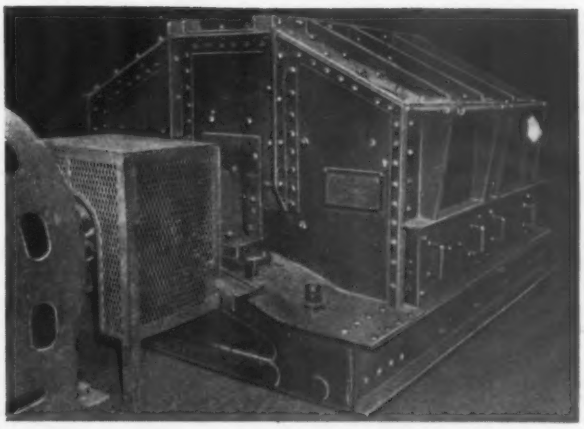
We also manufacture:
Lowden Dryers; Skinner Multiple Hearth Roasters; Ball, Rod and Tube Mills; Smelting Equipment; Diaphragm Pumps

COLORADO IRON WORKS *Company*

Canadian Locomotive Co., Ltd., Kingston, Ont., Can.
Vancouver Iron Works, Ltd., Vancouver, B. C., Can.
Head, Wrightson & Co., Ltd., Stockton on Tees, England
Head, Wrightson & Co., (So. Africa) Ltd. Johannesburg
The Clyde Engineering Co., Ltd., Granville, N. S.W.

MAIN OFFICE & WORKS: DENVER 2, COLO., U. S. A.

3 OUTSTANDING "PENNSYLVANIAS"



HAMMERMILLS (REVERSIBLE)

THIS MODERN "PENNSYLVANIA" REVERSIBLE DISPLACED A WELL KNOWN HAMMERMILL OF ANOTHER MAKE. CRUSHES 300 T.P.H. HARD HUDSON RIVER CEMENT ROCK.

Because of their better technique, "two-way" REVERSIBLES have almost completely replaced the older "one-way" "Pennsylvania" Hammermills.

In this modern 2-stage design, the heavy *primary* crushing is against a series of powerful Manganese Steel Anvils. Adjustable *duplex* Cages for both right and left hand rotation,—no "Hammer Turning",—oversize SKF Roller Bearings,—rugged STEELBUILT construction,—unusual accessibility. Capacities 10 to 600 T.P.H. Patented. Bulletin No. 1030.

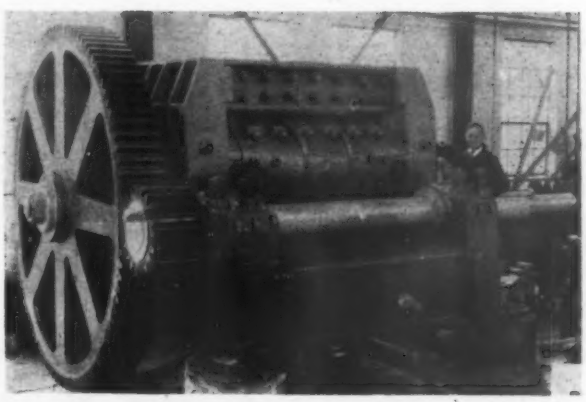
"PENNSYLVANIA" IMPACTORS

FOR UNUSUAL AND DIFFICULT REDUCTIONS OF ELECTRIC FURNACE REFRACTORIES, FERRO PRODUCTS, CHROME AND IRON ORES, SINTERS, LIMESTONES, DOLOMITES, CHEMICALS, AND A WIDE RANGE OF INDUSTRIAL MINERALS, "Pennsylvania" IMPACTORS involve basically new crushing concepts. For example, Impactors are *cageless*. Reduction depends on driving the falling Ore head-on, at high speed, against powerful Anvils.

Impact reduction is in *split seconds;* the Ore is actually *"cracked"* wide open, "explodes". Resulting "particle shape" is sharply cubing, granular, fewer fines, less smooth spheres.

High reduction ratios, *Reversible,* run either direction, a great advantage. Tramp Iron is no problem. There are exceptions, but generally speaking, damp or frozen Ores are no problem.

If you have a tough reduction problem, send our Test Plant 200 lbs. prepaid for full size commercial test. Come yourself and see test. Bulletin No. 6015. Patented.



"PENNSYLVANIA" SINGLE ROLLS

For *primary* and *secondary* reductions of Limestone, Cement Rocks, Refractory Chemicals, Coals, including a wide range of Industrial Minerals, "Pennsylvania" Single Rolls have many advantages (compared to conventional *primary* crushers). Not recommended for Traps or other high Refractories. Frozen or wet feeds that *paralyze* Jaw or Gyratories are generally handled freely by "Pennsylvanias".
The powerful uprunning toothed Crushing Roll constantly agitates the choke feed, avoiding plugging jams. Less hopper labor, less shutdowns. The few simple wearing parts,—Roll, Bearings, Gearing, Breaker Plate,—are all in plain sight of Operator. A simple safety shear-pin gives relief against tramp iron. Bearings are bushed, easily replaced. Mechanical lubrication in larger Crushers.

Powerfully STEELBUILT in capacities 5 to 800 T.P.H. Send for Bul.

Builders of
LOG WASHERS
BRADFORD BREAKERS
BRADFORD HAMMERMILLS
BRADMILLS
GRANULATORS
(All Patented)

PENNSYLVANIA CRUSHER COMPANY

17th Floor, Liberty Trust Building

Philadelphia 7, Pennsylvania

New York, Pittsburgh, Chicago, Los Angeles and Birmingham

Associated with Fraser & Chalmers Engineering Works, London

On the Battlefront

GRUENDLER Portable JAW CRUSHERS

PREPARING THE BASES FOR THE UNITED NATIONS IN CHINA, INDIA, AFRICA AND THE PACIFIC ISLANDS

Forward Base **being constructed with crushed stone and gravel for the B-29 Super Fortresses.**

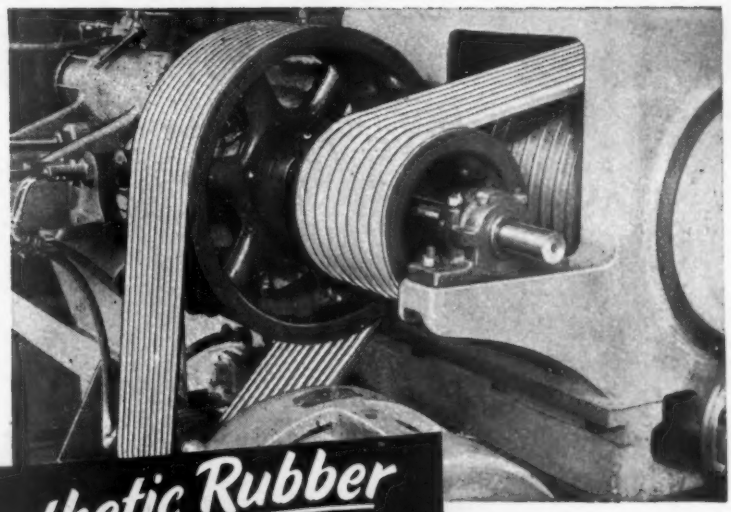
These units must be sturdy, rugged and easy to operate with a minimum of maintenace. You will find these qualities coupled with top performance in every Gruendler Crusher.

"Let GRUENDLER'S wartime efficiency insure your peace time prosperity"

GRUENDLER

CRUSHER *and* PULVERIZER CO.

2915-17 North Market St., ST. LOUIS (6), MO.



Here Is the ***Simple Reason*** *Why*

GATES *Synthetic Rubber* V-Belts

—Are Giving You Even *BETTER SERVICE* Than *Pre-War Belts* of *NATURAL RUBBER!*

NO ONE, before the war, had ever built a V-Belt that could stand the service now required by the Army's tanks, tractors, and self-propelled big guns. Gates has developed V-Belts that are now serving on army combat units all over the world—and has built these belts of synthetic rubber!

This fact is important to you now because every improvement developed by Gates for these Army belts has also been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

It is only rarely, of course, that improvements developed primarily for army combat use can be passed on immediately to the general user—but there are very good reasons why Gates has not been called upon to withhold these important V-Belt improvements from Industrial V-Belt users.

The plain fact is that no guns, no tanks, no airplanes can be produced unless V-Belts are supplied to drive the producing machines. It is equally clear that better V-Belts than ever before have been urgently needed to keep machines going on the forced-draft, war-production schedules that have had to be maintained 24 hours a day!

That is why Gates has been able to embody in the standard Gates Vulco Rope every V-Belt improvement which Gates specialized research has developed for use on the Army's motorized equipment—and that is why you are finding that your standard Gates synthetic rubber Vulco Ropes are today giving you better service than any V-Belts that were ever built before the war.

THE MARK OF Gates SPECIALIZED RESEARCH

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

CHICAGO 6, **ILL.** 549 West Washington
NEW YORK CITY 3, 215-219 Fourth Avenue
ATLANTA 3, **GA.** 738 C & S National Bank Building
LOS ANGELES 21, **CAL.** 2240 East Washington Boulevard
DENVER 17, **COLO.** 999 South Broadway
DETROIT 4, **MICH.** 8663 Grand River Avenue
PORTLAND 9, **ORE.** 333 N. W. 5th Avenue
DALLAS 2, **TEXAS** 1710 N. Market Street
SAN FRANCISCO 3, **CAL.** 1090 Bryant Street

TYLER SCREENS
STEP-UP
CAPACITY

SCREEN LARGER TONNAGES ON YOUR PRESENT EQUIPMENT BY USING TON-CAP OR TY-ROD SCREENS

Ton-Cap and Ty-Rod Screens are built to let the material through—not to hold it back with blank metal.

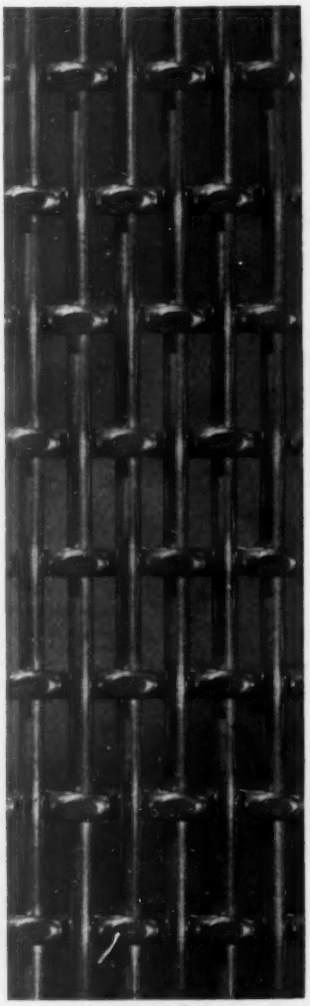
With oblong openings there is practically no tendency for particles of material to cling in the openings, to bind or clog the screen.

10% to 50%
More
"Open Area"

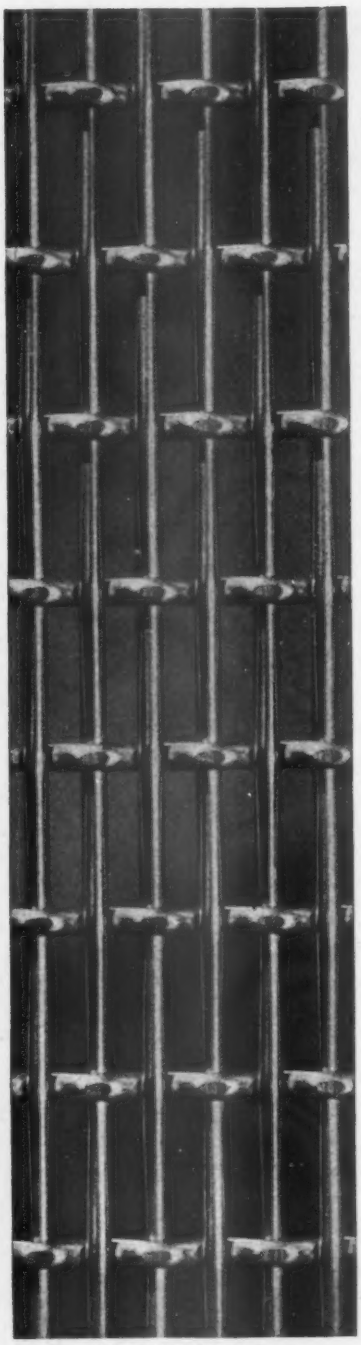
—

Less Tendency to
Blind or Clog

NO. 9441 TY-ROD



NO. 23 TON-CAP



NO. 1072 TON-CAP

NO. 9301 TY-ROD

THE W. S. TYLER COMPANY, CLEVELAND 14, OHIO

WOVEN WIRE SCREENS AND SCREENING EQUIPMENT

BEARINGS THAT PASS THE SCREEN TEST!

Whenever SKF Spherical Roller Bearings meet a shaft on a screen, there's bound to be reliable performance . . . large tonnages screened. That's particularly true of the shaft on this Ty-Rock Extra Heavy Duty 6′ x 14′ Two-Surface Screen with its full-floating, high-speed, circle-throw action. Here, the *built-in alignment* of SKF's is synonymous with high capacity for heavy gyrating loads. Low maintenance and power requirements are combined with a liberal factor of safety against overloads. No adjustments are needed. When a bearing is dependable, so is the machine of which it is a part. 5714

SKF INDUSTRIES, INC., PHILA. 34, PA.

No More Priorities

ON ST. REGIS VALVE-BAG PACKING MACHINES

Here's great news to start off 1945!

The government has consistently recognized the efficiency and economy of the St. Regis Valve-bag Packing System. And now, all priority controls have been removed from St. Regis bag-filling equipment.

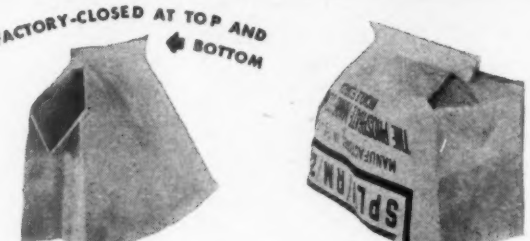
These machines, plus St. Regis Valve Bags comprise a packaging system which reduces packaging costs while providing greater product protection. Here's why:

The St. Regis Valve Bag is made of tough kraft paper ...2 to 6 plies in thickness. It is securely factory-fastened at both top and bottom and has a specially designed filling valve in one corner. When the bag is filled, the internal pressure of the contents automatically closes this valve. (See illustrations at right.)

St. Regis Valve-packing Machines accurately preweigh the product and pack it into the bags. This modern packaging system is saving time and the cost of extra labor and equipment for many manufacturers.

Our Machine and Engineering Division is ready to extend the use of the St. Regis Valve-pack System in the fields of construction materials, chemicals, agriculture, and food products. Write for full information today.

FACTORY-CLOSED AT TOP AND BOTTOM



1. *Before Filling:* Showing the corner valve of a Multiwall bag in the open position ready for machine filling.

2. *After Filling:* The internal pressure of the contents has automatically closed the valve and the filled bag is all ready for shipping.

St. Regis MULTIWALL PAPER BAGS

MULTIPLY PROTECTION • MULTIPLY SALEABILITY

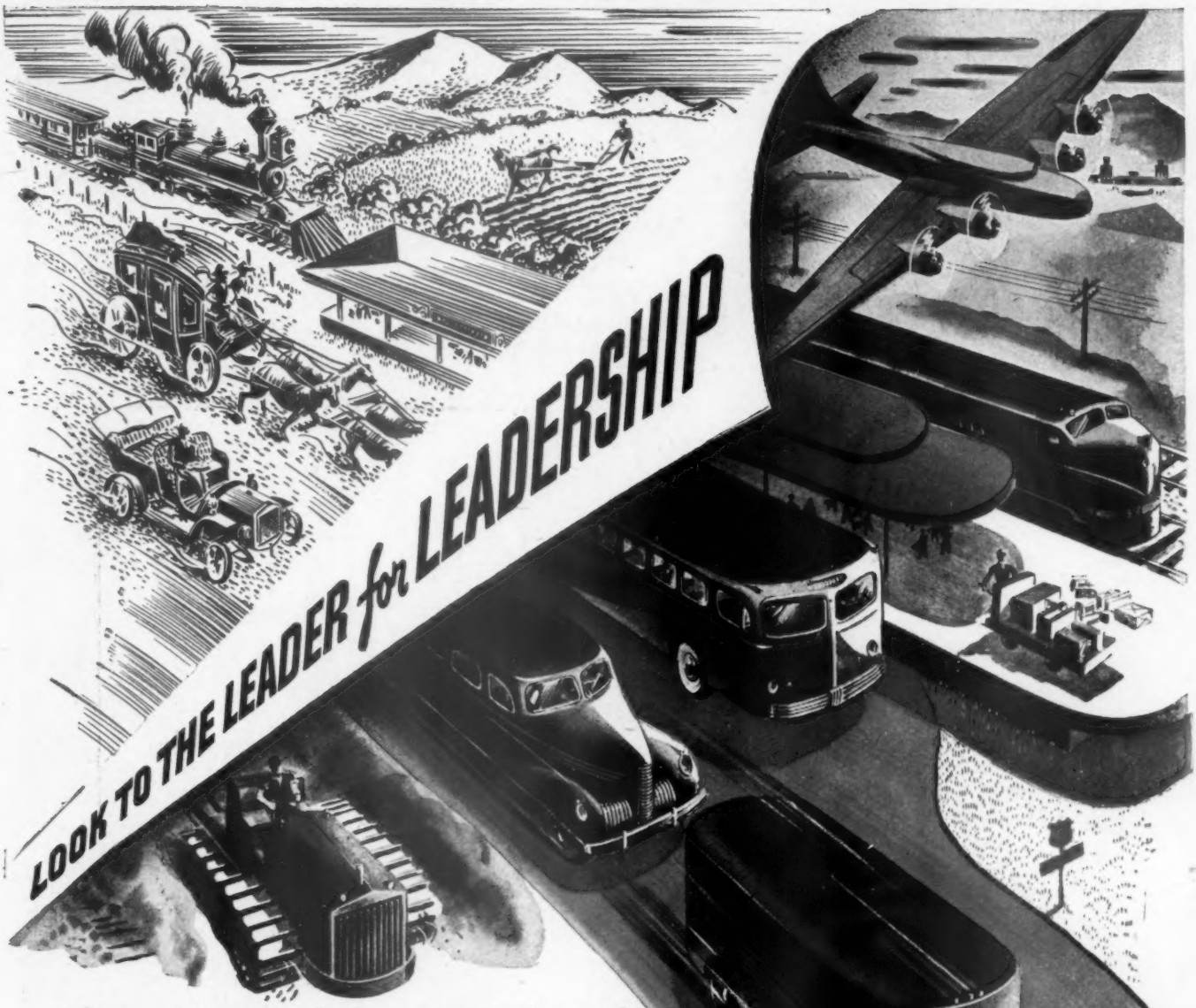
ST. REGIS PAPER COMPANY

TAGGART CORPORATION

NEW YORK 17: 230 Park Ave. CHICAGO 1: 230 No. Michigan Ave.
BALTIMORE 2: 2601 O'Sullivan Bldg. SAN FRANCISCO 4: 1 Montgomery St.

IN CANADA:
BATES VALVE BAG CO., LTD.
Montreal, Quebec
Vancouver, British Columbia

Boston, Mass. Birmingham, Ala. Dallas, Tex. Denver, Colo.
No. Kansas City, Mo. Los Angeles, Calif. New Orleans, La.
Franklin, Va. Seattle, Wash. Nazareth, Pa. Toledo, Ohio



Comparing yesterday's transportation with today's is an eye-opener. ★ In this march of progress Raybestos has kept ahead, by producing the most complete line of brake linings and clutch facings in America; by providing friction materials that are exactly right—because specially engineered—for every make, model and job, and by winning universal acceptance based squarely upon customer satisfaction. ★ Tomorrow, out of Raybestos' war production, will come still better Raybestos products, to make it still more worthwhile for you to "specify Raybestos".

THE RAYBESTOS DIVISION of *Raybestos-Manhattan, Inc.*, BRIDGEPORT, CONN.

POWER TAKEOFF CONES

Raybestos

FRICTIONEERS to AMERICA

Manufacturing the most complete line of highest quality metallic and non-metallic brake linings and clutch facings for every type of equipment, war and civilian. Also fan belts and hose.

TISCO MANGANESE STEEL

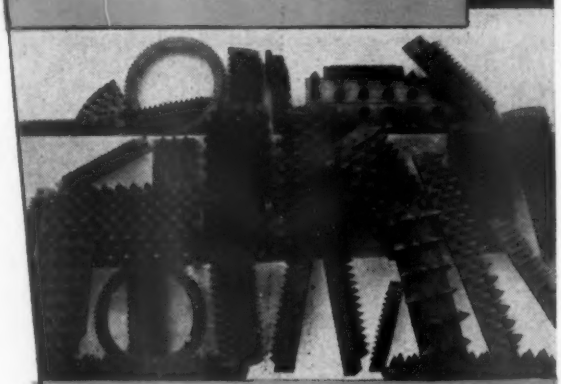
the HARDER it works—
the TOUGHER it gets!

Small wonder that TISCO Manganese Steel outwears other steels 2 to 10 times in punishing applications. The harder it works, the harder, more durable it becomes. Heavy blows and severe abrasion **increase** the hardness of the surface to resist wear; the tougher body underneath absorbs shocks and prevents breakage.

This unique property of cold "work-hardening" explains the outstanding service records of TISCO Manganese Steel wearing parts in quarrying, mining, dredging, crushing, grinding, pulverizing and similar equipment.

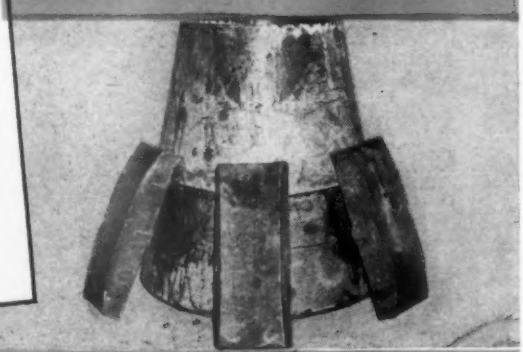
TISCO is the original Hadfield's Manganese Steel in America, carefully controlled in every step of manufacture to insure utmost toughness, wear resistance and soundness. Specify TISCO Manganese Steel wherever parts are subjected to heavy impact. and abrasion—both new equipment and replacements. Our metallurgists and engineers are at your service. Write for technical literature giving physical properties of TISCO Manganese Steel.

FOUNDED TW 1742



Above: Coal and Coke Crusher Segments.

Below: Gyratory Crusher Mantle with Concaves.



OTHER TISCO PRODUCTS:
MANGANESE STEEL CASTINGS
OTHER ALLOY AND CARBON STEEL CASTINGS
HIGH PRESSURE GAS CYLINDERS
ALNICO PERMANENT MAGNETS
MANGANESE-NICKEL WELD ROD
SPECIAL TRACKWORK • MISC. SEAMLESS TUBING

Taylor-Wharton Iron and Steel Co.

HIGH BRIDGE, NEW JERSEY • EASTON, PENNSYLVANIA

"A name worth remembering"

Fairbanks-Morse

To search constantly for ways to improve our products is a basic Fairbanks-Morse policy. Development work goes on continually in our research laboratories—in good years and bad, in time of peace and in time of war. During the months and years ahead this research will yield a rich harvest to users of scales, Diesel engines, generators, motors, and pumps.

R. H. Morse Jr.

General Sales Manager

Sturdily built without springs or delicate parts, Fairbanks-Morse Scales are more than highly accurate weighing instruments. In their countless types, styles, and modifications they weigh while materials are *moving*, furnish *printed* weight records, *count* small parts and products, weigh and disburse preset amounts *automatically*, and can keep ingredient proportions *secret*.

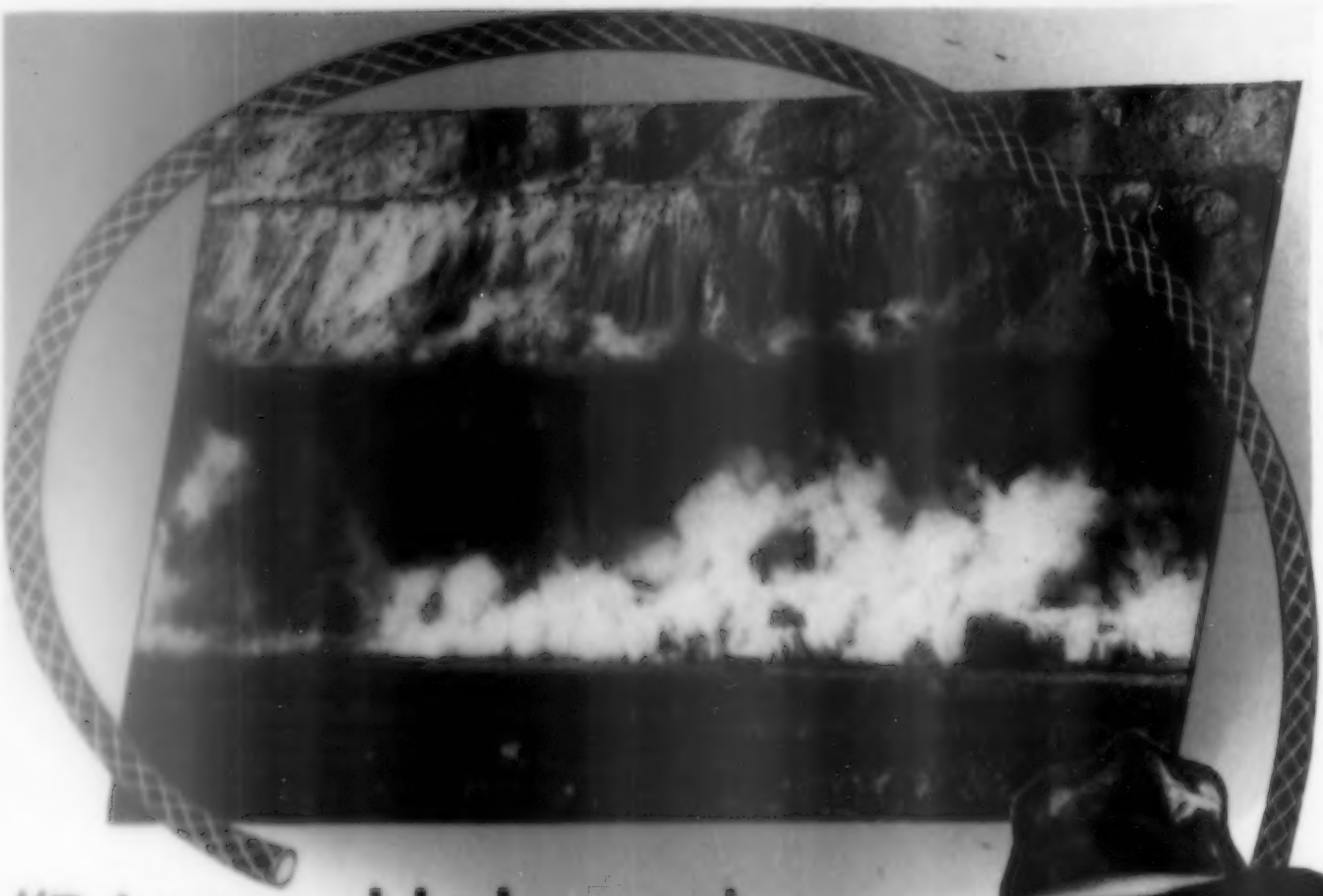
Fairbanks, Morse & Co.
Chicago 5, Illinois

Scales

Diesel Locomotives • Diesel Engines • Generators • Motors Pumps • Scales • Magnetos Stokers • Railroad Motor Cars and Standpipes • Farm Equipment

BUY MORE WAR BONDS

© 1944. Fairbanks, Morse & Co.



"Primacord helps make every minute count"

With more work to do, and fewer men to do it, pit and quarry men naturally turn to Primacord to help make every minute count.

Primacord saves *drilling time*, permits more holes to be shot at one time — hence, less drilling spoiled by back break.

Primacord saves *moving time*, gives more efficient use of equipment — hence, longer periods of production with fewer breaks.

Primacord saves *loading time*, because it simplifies loading, detonates every cartridge in the hole — hence, allows powder men to vary the load, split it into decks, and use breakers without separate detonators.

Primacord saves *hook-up time*, makes up with square knots and half-hitches — hence, gives easiest connections and simplest layouts.

Primacord saves *checking time*, as the Primacord trunk and branch line connections are in plain sight, easily inspected.

Five ways from Sunday, Primacord is the logical time-saving choice!

P-1

THE ENSIGN-BICKFORD COMPANY
Simsbury, Connecticut
Manufacturers of
ENSIGN-BICKFORD SAFETY FUSE—SINCE 1836

PRIMACORD-BICKFORD Detonating • Fuse •

TIME *is money in road building*

It's time **NOSTRIP**, the *tested and approved** admixture for tar and asphalt, went to work for you! Time that **NOSTRIP**-treated bitumen saved you time and labor dollars on the job . . . putting you days ahead of schedule . . . extending your road season six weeks! Your first drum is our best salesman; it proves an invaluable time and money saver because:

The coated aggregate can be laid at any temperature above Zero; heating or drying is unnecessary. It laughs at water, easily passing the Distilled Water and Nicholson Stripping Tests. The treated bitumen adheres permanently to any road surface, wet or dry . . . even in rainstorms!

NOSTRIP halves blading and mixing time, and used with R. C. cutbacks speeds construction of airport runways, roads and shoulders. It is ideal for bank run gravel or beach sand in coastal regions. A boon to Travel Plants, **NOSTRIP** doubles adhesion. With hydrophyllic aggregates, lime or other additions are never needed.

*You do not experiment when using **NOSTRIP**. It has proven itself in all types of installations for four years and is now used in thirty-three states! Write for laboratory and field test reports, and we will send unbiased testimony from State Highway Officials and contractors . . . You be the judge!

★ *Our large modern plant in Jamaica, N.Y., (below) can produce enough* **NOSTRIP** *to treat 1,000,000 gallons of asphalt per day.*

THE ALL-YEAR ROAD MATERIAL

NOSTRIP

AN ADMIXTURE FOR TAR AND ASPHALT

MAGUIRE INDUSTRIES, INC., NOSTRIP DIVISION, 2010 BROADWAY, NEW YORK 23, N.Y.

Can You Solve This One?

Can you draw a perfect square which has one of these four stars in each of its sides ?

This was a Cinch to Thermoid

The Hammermill, used extensively by farmers, has a drive pulley of small diameter traveling at high speed. This caused rapid failure of the conventional type of folded edge, spliced, endless farm belt by deterioration of the splice and ply separation. The problem was to design a belt flexible enough to resist ply separation and with a splice flexible enough to negotiate the small pulley without weakening.

Thermoid came up with the solution in its now well known Ham-R-Mill Belt. The splice was entirely eliminated by building the belt in a continuous winding of fabric plies. To prevent ply separation a skim layer of live rubber stock was inserted between plies. The belt was protected from moisture and weather with a special sealing lacquer on the edges and by a thin layer of skim rubber on the top. The contact surface remained the conventional friction surfaced fabric.

Numerous problems of this type are solved every day by Thermoid. Their solutions are comparatively easy because Thermoid research is constantly developing new applications of industrial rubber products to do a better job. If you are faced with an industrial rubber products problem call the Thermoid representative. Out of his experience, plus Thermoid's complete line, extensive research, and manufacturing facilities, may come your solution.

DON'T PUT IT OFF 'TIL TOMORROW *Buy More War Bonds Today!*

Thermoid Rubber

DIVISION OF THERMOID COMPANY
TRENTON, NEW JERSEY

"It's Good Business to Do Business with Thermoid"

THE THERMOID LINE INCLUDES: TRANSMISSION BELTING • F.H.P. AND MULTIPLE V-BELTS AND DRIVES • CONVEYOR BELTING • ELEVATOR BELTING • SHEET PACKINGS • WRAPPED AND MOLDED HOSE • INDUSTRIAL BRAKE LININGS AND FRICTION PRODUCTS • MOLDED HARD RUBBER AND PLASTIC PRODUCTS

faster one-man operation . . . greater mobility on rough ground

G-200 LIGHT-WEIGHT WAGON DRILL

THE specially designed mounting enables the light-weight G-200 Wagon Drill to be moved readily and quickly over difficult terrain. Light but rigid tubular carriage frame is mounted on 3 roller-bearing wheels with smooth-riding pneumatic tires. Rotary air motor with graduated control — plus worm gear transmission and feed chain — assure steady feed, quick return and ample power for pulling tight steel. Chain-and-sprocket hand-operated hoist permits easy raising and lowering of drill carriage, while sliding cone allows rapid adjustments to ground conditions. The G-200 Wagon Drill is available with the CP-50 (3″), CP-60 (3½″) or CP-70 (4″) Drifters. Write today for complete data.

★★★★★★★★★
PNEUMATIC TOOLS
ELECTRIC TOOLS
HYDRAULIC TOOLS
ROCK DRILLS

CHICAGO PNEUMATIC
TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

★★★★★★★★★
AIR COMPRESSORS
VACUUM PUMPS
DIESEL ENGINES
AVIATION ACCESSORIES

AGGREGATES HANDLING

MINE FAN DRIVE

GRAIN ELEVATORS

CARBON BLACK STORAGE

Whatever your requirements in the conveying and power transmission field, Continental is equipped to engineer and manufacture the correct equipment to fill your needs. Some typical installations and items of equipment are illustrated. Specify Continental.

PENNANT AWARDED October, 1941
1st *renewal* (Star) May, 1942
2nd *renewal* (Star) October, 1942
3rd *renewal* (Star) April, 1943
4th *renewal* (Star) December, 1943

SAND HANDLING

SPECIAL CONVEYORS

SCREW CONVEYORS, FEEDERS, TANKS

POWER PLANT INSTALLATION

INDUSTRIAL DIVISION

CONTINENTAL GIN COMPANY

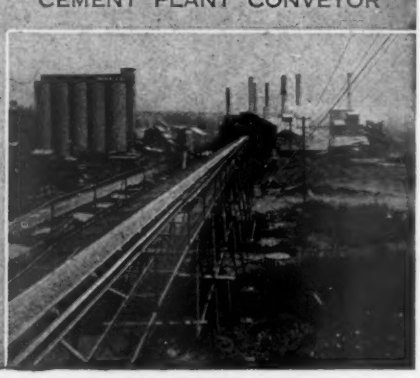
BIRMINGHAM, ALABAMA

CGC ATLANTA • DALLAS • MEMPHIS CGC

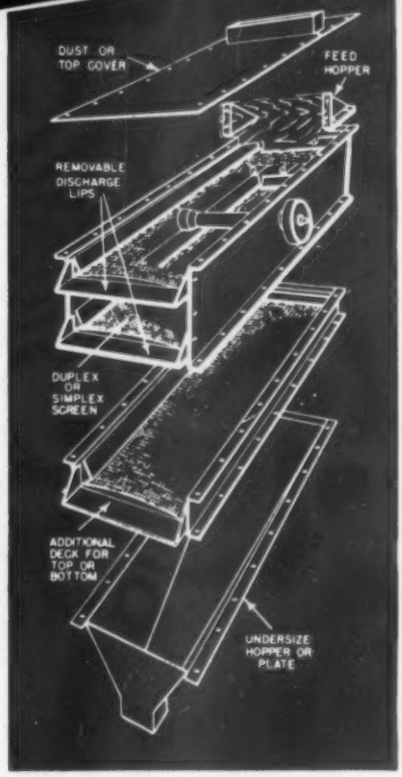
UNDERGROUND CONVEYORS

BELT CONVEYOR ACCESSORIES

CEMENT PLANT CONVEYOR



DENVER-DILLON Floating Circle VIBRATING SCREEN



With Only Two Bearings . . . Cuts Your Power Cost in Half

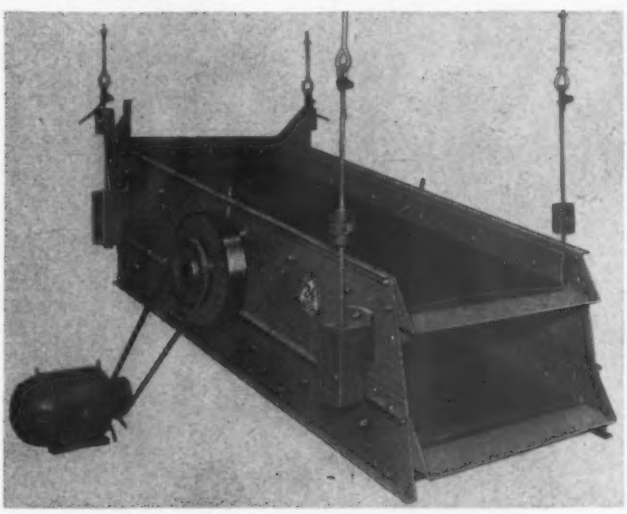
The patented design of Denver-Dillon Vibrating Screens requires just two bearings instead of the four used in ordinary mechanical screens, resulting in simplicity of construction . . . which cuts power cost in half for any screening job; reduces operating and maintenance costs.

With this simplified, lighter weight construction all power is put to useful work . . . thus, the screen can operate at higher speeds when desired, giving greater screening capacity at lower power cost.

The "sting" of the positive, high speed vibration eliminates blinding of screen openings.

Positive "Floating Circle" Motion Increases Screening Efficiency

The "Floating Circle" principle gives the entire screen body a positive and uniform full circle motion . . . thus, the vibration is uniformly distributed over the entire screen area, resulting in greater capacity and more efficient screening. There are no "dead" spots on the screen to reduce capacity.



Suspension Type Denver-Dillon Vibrating Screen. Double deck converted from a single deck unit.

Flange Construction Gives Maximum Flexibility

Flange method of construction permits economical means of attaching additional screen deck on top or bottom of standard simplex or duplex screens. Dust covers and hoppers may also be added. This flexibility permits screen conversions, frequently necessary due to changes in operations, without expense of purchasing entire new screen.

Get Your Free Copy of New Bulletin

The Denver-Dillon Vibrating Screen is made in sizes from 1′ x 2′ to 6′ x 14′ with from one to four decks, in suspended or floor mounted types. For complete specifications on these screens just fill in and mail the coupon below TODAY.

*Patented and Patents Pending

The firm that makes its friends happier, healthier and wealthier

DENVER EQUIPMENT 24 HOUR SERVICE COMPANY

STANDARD RELIABLE 24 HOUR SERVICE EFFICIENT

DENVER EQUIPMENT COMPANY, 1400 17th St., Denver 17, Colorado

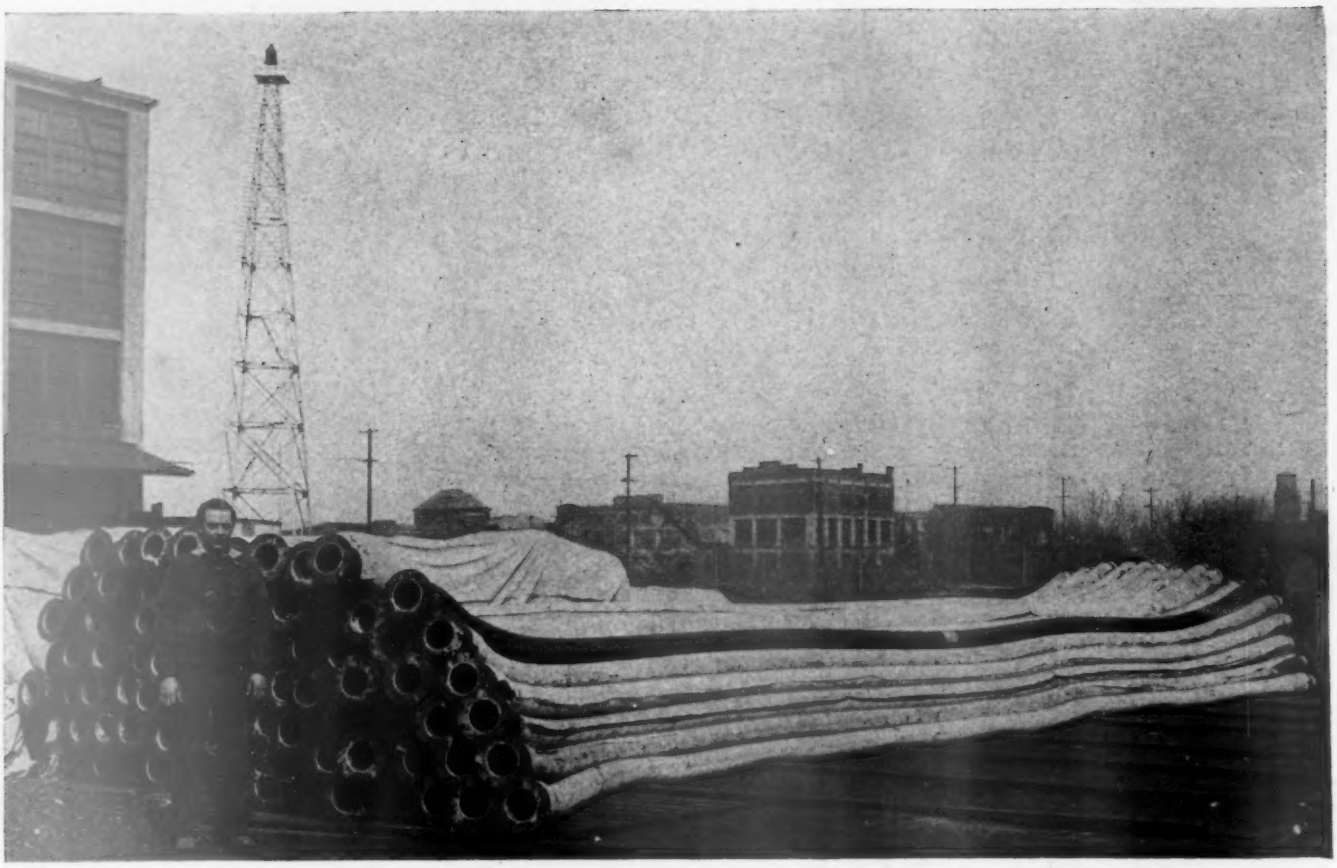
Gentlemen: Please send me a free copy of your new Denver-Dillon Vibrating Screen Bulletin No. S3-B5.

NAME.....

COMPANY.....

ADDRESS.....

CITY..... STATE..... COUNTRY.....



War requires a lot of HOSE

When the requirements of War needs hose, Quaker gives that order the right of way. You would not want it otherwise.

War does demand an unlimited amount of hose. Even with Quaker's large capacity to turn out thousands of feet daily, it still is not enough to supply both the War requirements and the needs of the civilian customers.

Here are the types of hose that the War must have in unlimited quantities: Fire Hose, Oil Suction and Discharge Hose, Special Oil Hose for fueling ships, Submarine Rescue Hose, Under Water Welding Hose, Special Crash Truck Hose, Air Hose, Water Hose and Steam Hose.

The oil conveying type of Hose shown in the illustration is only one of the many kinds that is required for a successful waging of the War.

Prospects are getting brighter to that day when Quaker's production can be devoted 100% to civilian requirements.

For 60 years, Quaker has been manufacturing Quality Industrial Products . . . Belting—Hose—Packings and Moulded Parts. Regardless of what your rubber problem may be, feel free to consult with us—

"If there is a way to get it done—Quaker will do it"

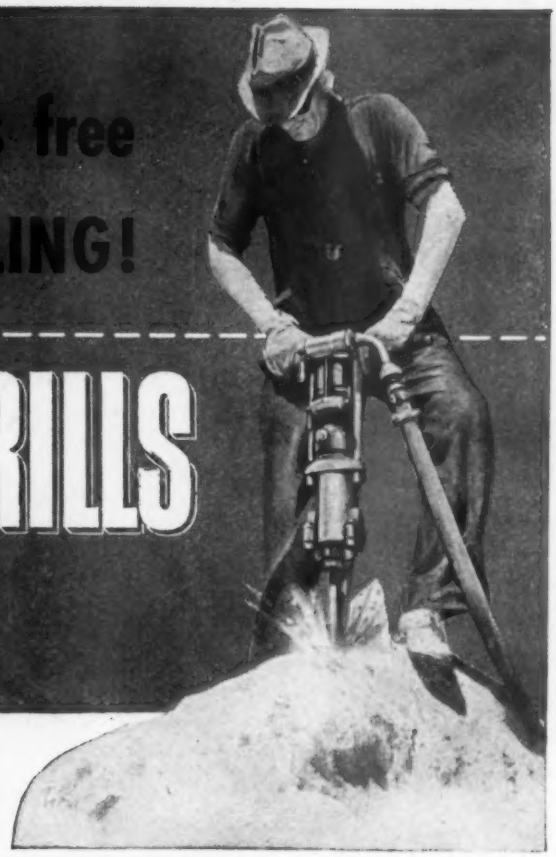
QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. • NEW YORK 7 • CLEVELAND 15 • CHICAGO 16 • HOUSTON 1

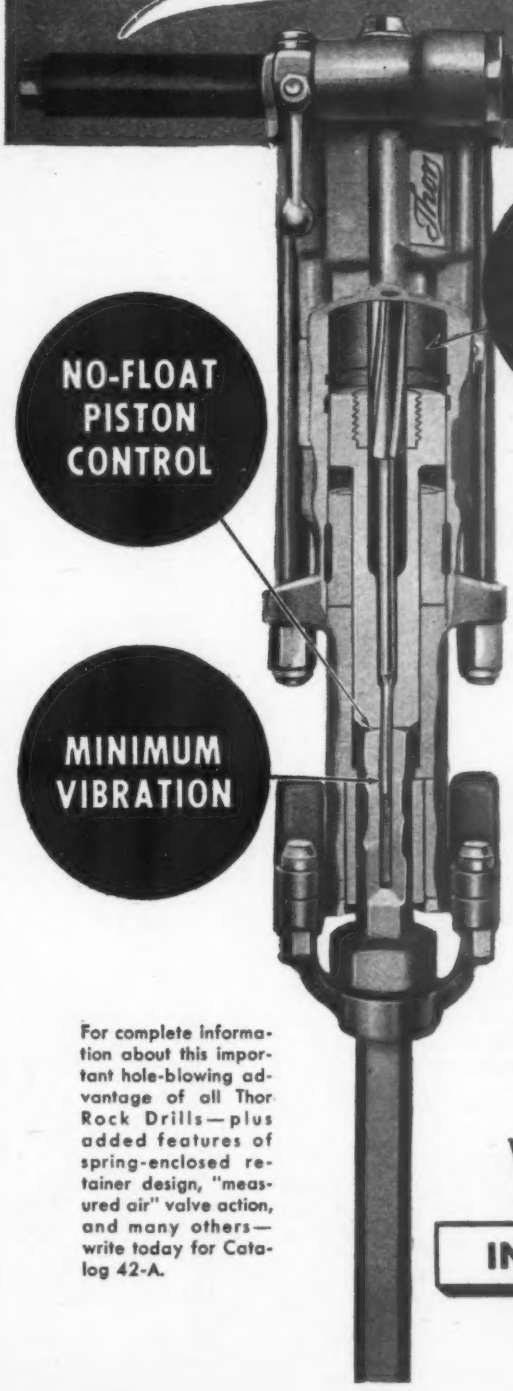
Western Territory

QUAKER PACIFIC RUBBER COMPANY • SAN FRANCISCO 5 • LOS ANGELES 21

They BLOW all cuttings free for FASTER, SURER DRILLING!



Thor ROCK DRILLS



Full-Pressure Air Blast Straight Through the Tool Assures Positive Hole-Cleaning

There's no accumulation of cuttings at the drilling point to cut down speed or stall the drill by jamming the steel when Thor Rock Drills let go with their *full-line* blast of air to keep the hole clean . . . to keep the drilling rate fast and steady!

Powerful hole-blowing is an important advantage of all Thor Rock Drills which not only steps up drilling speed for more footage per shift, but also slashes maintenance costs by extending the life of both the tools and the drill steels through minimum vibration.

HERE'S WHY CUTTINGS WILL NOT STALL THOR ROCK DRILLS!

Full-Line Pressure—Exclusive Thor design places exhaust ports to remove all air from *below* the piston when the operator blows the hole. Full-line air pressure is concentrated behind the piston to force it down tight against the steel—directing full air power straight through the machine and into the hole.

No-Float Piston Control—Forcing the piston tight against the steel prevents floating and fluttering inside the cylinder during the blowing operation. No air is wasted. Hole-blowing is extra-efficient and powerful.

Minimum Vibration—The air tube inside the piston and hammer is *held rigid* by tight joining of the piston and steel to assure longer service life by reduction of vibration.

For complete information about this important hole-blowing advantage of all Thor Rock Drills—plus added features of spring-enclosed retainer design, "measured air" valve action, and many others—write today for Catalog 42-A.

Thor *Portable Pneumatic and Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO 6, ILL.

Branches in Principal Cities

STOUT STEEL MUSCLES
for the Merchant Marine

The rigging for a typical cargo ship requires over 11,000 feet of wire rope, ranging in size from ¼ inch to 2¼ inches, and weighing over 10 tons. Scores of shipyards are building such ships—and using plenty of tough, dependable Wickwire Rope.

Oil fields, mines, logging camps, construction crews—and our fighting men abroad—also depend upon the stout steel muscles of Wickwire Wire Rope to do their heavy hoisting and hauling jobs. That's why—even with more equipment and working at full capacity 24 hours a day—we cannot keep up with the great demands for Wickwire Rope.

Since wire rope is harder to get, each length must be made to last longer. WISSCOLAY *Pre*formed Wire Rope, manufactured by Wickwire Spencer, not only lasts longer, but it's kink-resistant—easier to cut, splice and install—safer to handle.

If you have a wire rope problem our wire rope engineers will be happy to be of service. Call or write our nearest branch office or Wickwire Spencer Steel Company, 500 Fifth Avenue, New York 18, N. Y.

VALUABLE GUIDE FOR ALL ROPE USERS

Thousands of copies of "Know Your Ropes" have been sent to men in industry and the Services. Packed with ideas for making wire rope last longer this 82 page book contains 48 wire rope life-savers; 78 "right and wrong" illustrations, and 20 diagrams, tables, graphs, charts.

SEND FOR YOUR FREE COPY

Send your wire rope questions to:

WICKWIRE SPENCER STEEL COMPANY

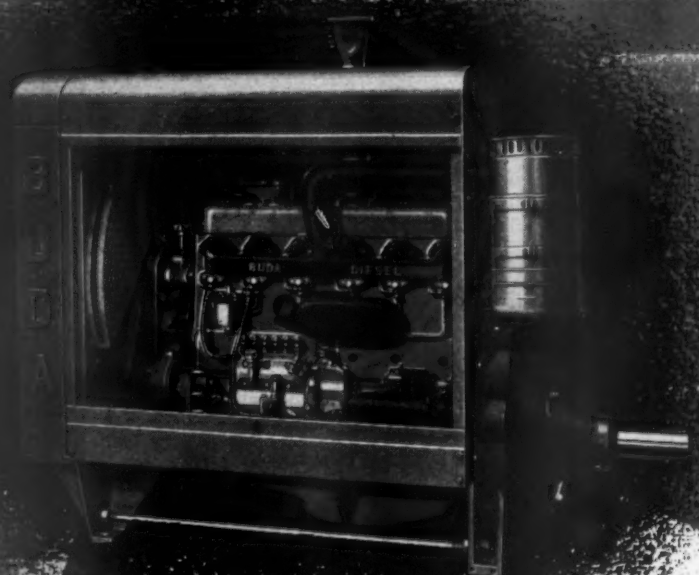
500 FIFTH AVENUE, NEW YORK 18, N. Y.

Abilene · Buffalo · Chattanooga · Chicago · Detroit · Houston · Los Angeles · Philadelphia · San Francisco · Tulsa · Worcester

Power...

precedes progress

8th of a series contrasting early power sources with modern BUDA power. ★



There was plenty of manpower in America in the 1800's. Nevertheless, mining and all other productive activities were limited by lack of the efficient, economical abundance of power that you have available today in the new BUDA Diesel Engines — the last word in modern power units.

Ordinary Diesels

High cylinder pressures produces sledge-hammer blows that punish pistons, rods and crankshaft every power stroke.

BUDA Low Pressure Diesels

Prolonged "Low-Pressure" combustion delivers a smooth steady power stroke that cuts vibration and saves parts.

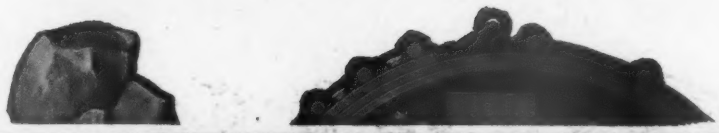
ARMY (E) NAVY

Write or wire for detailed information

BUDA

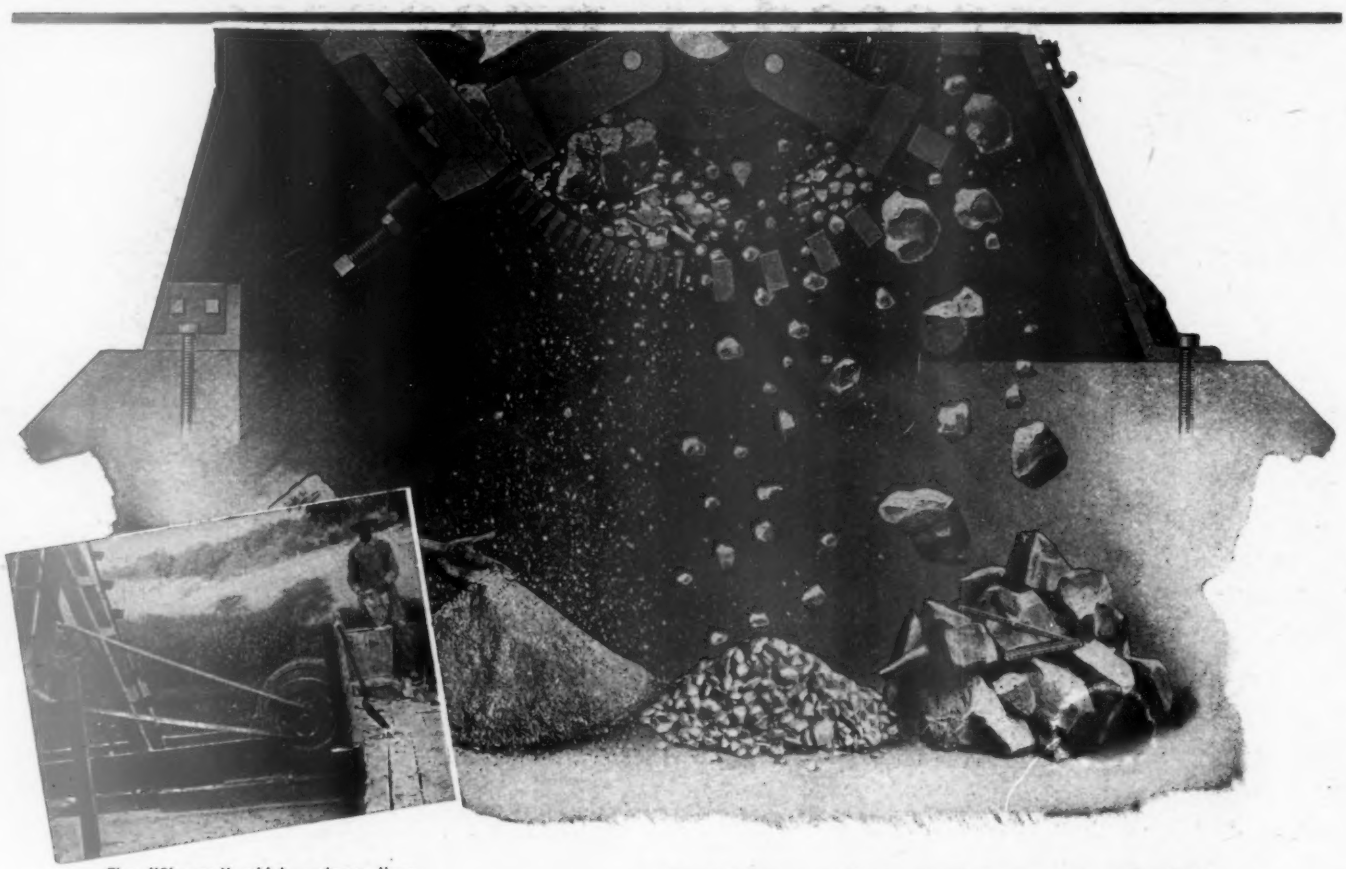
15426 Commercial Ave.
HARVEY (Chicago Suburb) ILLINOIS

BUDA
Service is Nation-wide



Williams Hammer Crushers

Handle Larger Rock :: 50% Less Investment :: Better Product



The "Slugger" which reduces "one-man" size limestone to 1", ¾" or agstone.

Feed opening of the "Mammoth" crusher which crushes 48" rock to 1" in one operation.

A Size for Every Job

The "Mammoth" crushes 48" rock to 3", 2" or 1" in one operation. Takes the place of a primary breaker and recrusher.

The "Jumbo" reduces 20" to 30" rock to 1¼" and smaller.

The "Slugger" crushes screen rejects or "one man" size rock to 1", ¾", ½" and finer.

The "NF" type is supreme as a recrusher for reducing 5" stone to 1", ½" or agricultural limestone.

The "Non-Clog" for crushing wet muddy rock. Cannot be clogged.

Fine Grinders • *Air Separators* • *Dryer Mills*

The Williams Patent Crusher and Pulverizer Co.

802 St. Louis Ave. ST. LOUIS, MO.

Sales Agencies in All Principal Cities Including

CHICAGO 37 W. Van Buren

NEW YORK 15 Park Row

PHILADELPHIA, PA. 11 N. Fourth St.

THE WILLIAMS PATENT CRUSHER & PULVERIZER CO. ST. LOUIS, MO. U.S.A. TRADE MARK

REG U.S. PAT OFF

Williams

OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

WILLIAMS

PATENT CRUSHERS GRINDERS SHREDDERS

COARSEST to FINEST ... ANY ROCK PRODUCTS DUST CAN BE CONTROLLED WITH AAF EQUIPMENT

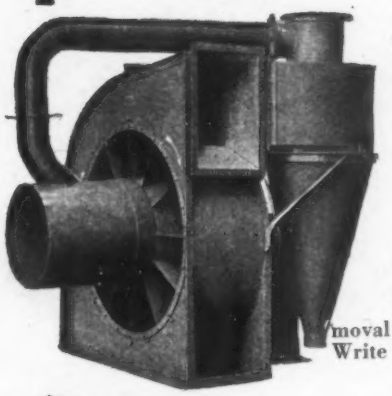
Shown below are six of the principal American Air Filter dust control units used by the rock products industry. Complete engineering data and literature are available on the entire AAF line. If you have a dust problem, consult with us—there's no obligation. Meanwhile, write for complete descriptive bulletins.

AAF

PROCESS DUST CONTROL

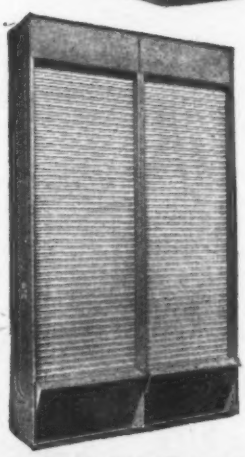
TYPE D ROTO-CLONE

A revolutionary advancement in process dust control—combines fan and dust collector in a single compact unit. More efficient than standard exhauster and cyclone separator which it replaces. Simplifies dust control, eliminates extensive piping and reduces cost of installation. Wide variety of types and sizes. Write for Bulletin No. 272.



TYPE F ROTO-CLONE

Similar in principle to the Type D but of steel plate construction. Widely applied to cleaning of stack gases from boilers or kilns, and exhaust from large rotary dryers or coolers. Also used for dedusting, air cleaning and other systems requiring dust removal from large air volumes. Write for Bulletin No. 273.

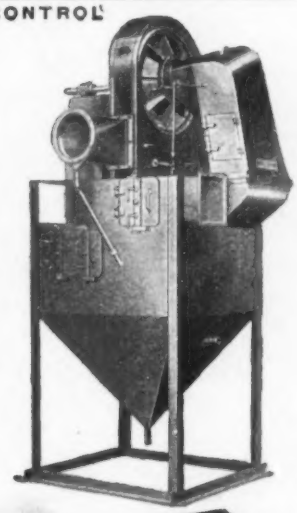


AAF AIR CLEANERS FOR ENGINE AND COMPRESSOR PROTECTION

MULTI-DUTY FILTER

May be connected to serve several engine or compressor units at one time. The Multi-Duty is also recognized as the finest automatic air filter for air conditioning service. Choice of several types of filter curtains to meet any existing dust condition. Furnished in any size or capacity. Send for Bulletin No. 241A.

ATMOSPHERIC DUST CONTROL

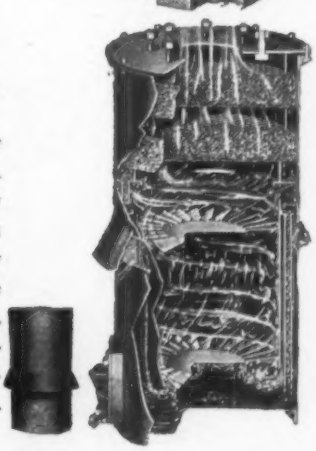


TYPE W ROTO-CLONE

Combines the scrubbing effect of water sprays with principle of dynamic precipitation as employed in the Type D. Provides complete collection of finely divided materials, eliminating any possibility of a secondary dust problem. Collected material disposed of as sludge. Available in capacities up to 30,000 c.f.m. Write for Bulletin No. 274A.

TYPE N ROTO-CLONE

A hydrostatic collector with induced water scrubber. No moving parts, spray nozzles or pumps. Especially suitable for the collection of cementitious dusts. All interior surfaces readily accessible and when required can be economically protected against corrosion. Write for Bulletin No. 277.



CYOIL OIL BATH CLEANER

Outstanding AAF air cleaner for engines and compressors. Takes care of extremely heavy dust concentration. Employs a new 4-way cleaning principle by which air is precleaned *before* entering conventional filter cell. The Cycoil and other AAF filters for similar services are described in Bulletin No. 130D.

AMERICAN AIR FILTER CO. INC.
INCORPORATED

192 CENTRAL AVENUE, LOUISVILLE, KENTUCKY
IN CANADA: DARLING BROTHERS, LTD., MONTREAL, P. Q.

PIT AND QUARRY

JANUARY, 1945

Vol. 37. No. 7

CONTENTS

Editorial: 60,000,000 Jobs 70
News of the Industry 73
Washington News Letter 77
The Victory Program . . . and Your Business . . 78
America's Cities Face the Post-War Period . . . 79
Commercial Aggregate Production Down in 1944 108
Post-War Opportunities of Quarry Industry . . . 112
Drop in Cement Shipments Checked in Last Months of 1944 115
Changing Conditions Require Alterations at Puget Sound Plant 121
Sales of Miscellaneous Nonmetallics Held Up Well 126
New Jersey Enacts New Silicosis Law 130
Problems of Off-Road Haulage Units in Pits and Quarries—IV 131
Manufacture of Refractories for the Portland Cement Industry—II 135
Quarry Blasting Problems Can Be Reduced Through Education 138
North American Cement Corporation Revises Quarry and Crusher Layout 140
Directors of Industrial Sand Association Meet . 141
New Machinery — 1944 143

Personal Mention 152
Obituaries 154
Legal Decisions 155
Traffic News Digest 160
New Machinery and Supplies 167
Trade Notes 169

MEMBER AUDIT BUREAU OF CIRCULATIONS

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals. Copyrighted 1944 by Complete Service Publishing Co., 538 S. Clark Street, Chicago 5, Ill.

H. W. BAUMGARTNER
President

STANLEY A. PHILLIPS
Vice-President and Directing Editor

W. E. TRAUFFER
Editor

HARRY F. UTLEY
Senior Field Engineering Editor

WILLIAM M. AVERY
Field Engineering Editor

SPENCER JONES
Eastern Field Engineering Editor

BARRY JAMES
Associate Editor

W. T. KLUSSMAN
Secretary

RAY L. SMITH, JR.
Circulation Manager

●

General Manager, Field Contracts:
JAMES E. MONTGOMERY
538 South Clark Street
Chicago 5, Ill.

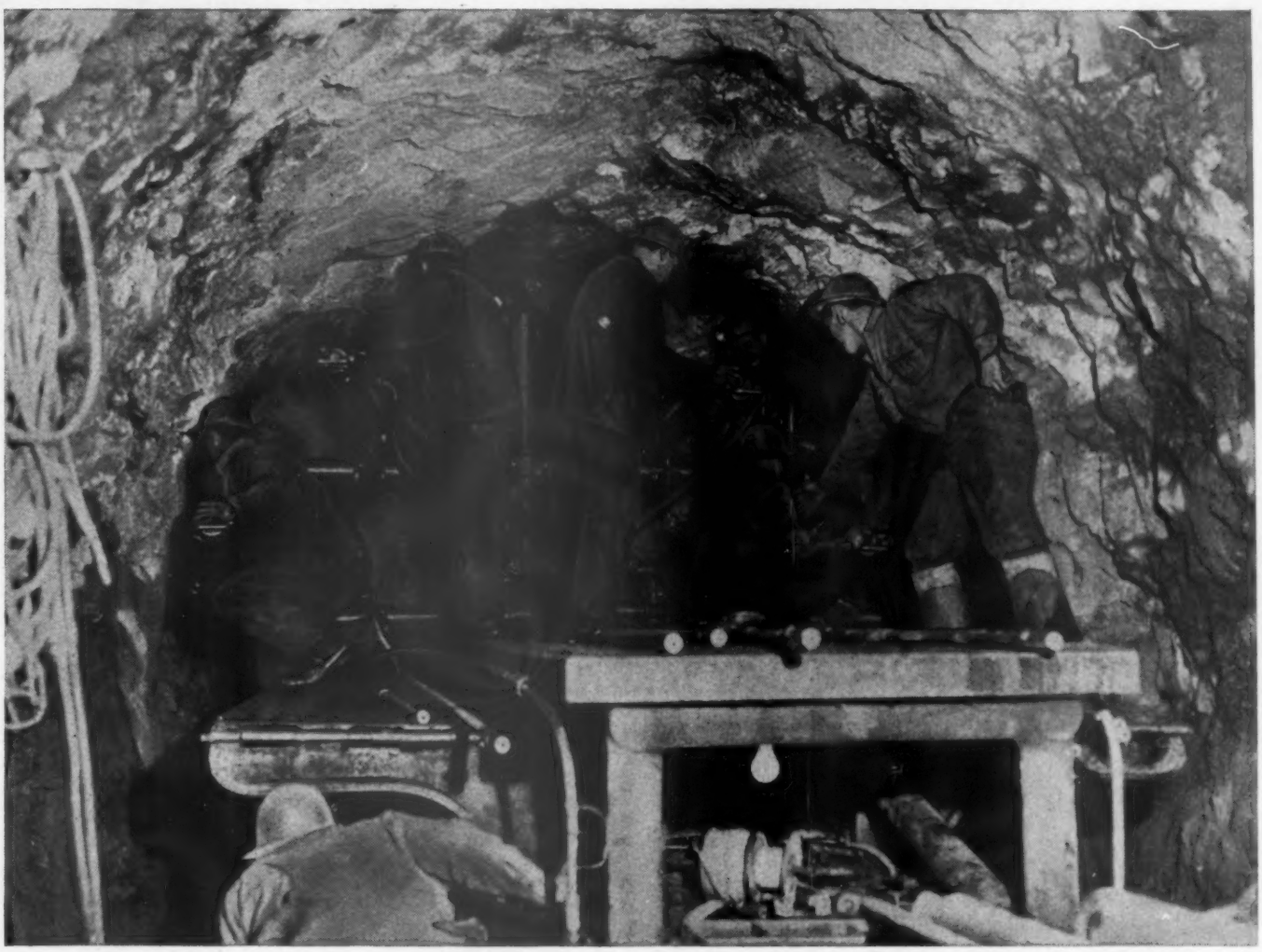
Eastern Manager, Field Contracts:
W. A. WILSON
Assistant
CHARLES H. BUSSMANN
Room 1235, 101 Park Ave.
New York 17, N. Y.

Central Manager, Field Contracts:
D. R. EGBERT
859 Leader Bldg.
Cleveland 14, O.

Western Manager, Field Contracts:
E. C. KAYE
Chicago 5, Ill.

Field Manager, Pit and Quarry Handbook:
P. K. JOHNSON
Chicago 5, Ill.

Pacific Coast Representative:
HARRY F. UTLEY
111 South Redman Ave.
Whittier, Cal.



Record-Breaking Bore

LONGEST TUNNEL ever driven from only *two* headings, is the recently completed Alva B. Adams bore in Colorado. This mighty project will take water that would normally flow to the Pacific and bring it down on the Atlantic side of the Rockies to irrigate some 650,000 acres of farmland. We are proud to have been associated with this history-making achievement through the preference for Texaco lubricants shown by the builders.

Wherever compressed air is used . . . whether in an open quarry or in the close confines of a tunnel . . . operators are setting new performance records with the help of Texaco lubrication.

Texaco Alcaid, Algol or *Ursa Oils* in air compressors, for example, assure wide-opening, tight-closing valves, free piston rings, open ports, clear lines, continuous air supply. They also assure maximum service life between overhauls, fewer repairs and replacements. Their use in air compressors is worldwide.

Texaco lubricants have proved so effective in service they are definitely preferred in many fields, a few of which are listed at the right.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States.

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ *More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.*

★ *More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.*

★ *More revenue airline miles in the U. S. are flown with Texaco than with any other brand.*

★ *More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.*

★ *More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.*

TEXACO

TEXACO Lubricants

FOR ALL AIR COMPRESSORS AND TOOLS

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON SUNDAY NIGHTS ★ METROPOLITAN OPERA BROADCASTS SATURDAY AFTERNOONS

EDITORIAL

60,000,000 Jobs

EVER SINCE the needs of all-out war exhausted the ranks of the employable but unemployed more and more people have been wondering why "full employment", brought about so easily by the demands for the materials and machinery of destruction, could not also be attained in the peace-time pursuits of supplying humanity with the necessities and moderate comforts of constructive living. The wonder seemed particularly natural when they thought also of the destruction, not of war materiel alone, but of the damage done to human habitations and to the factories where the material needs of man had to some extent been satisfied by the processes of industry. So quickly and readily do our minds leap from the problems of men here at home to men all over the globe.

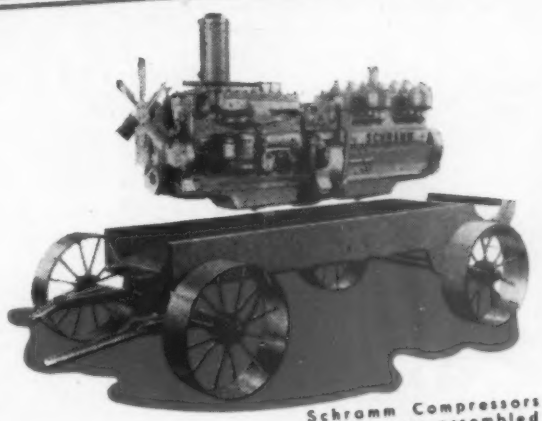
So, when the President spoke last fall of the need for providing 60,000,000 jobs, even among the most skeptical there sprang the hope that this goal, or something closely approximating it, might be achieved in the days to follow the war. If, they reasoned, the money could be found to buy the materials and to employ the labor necessary to meet the unprecedented needs of war, why could not we find the money to make possible an equal degree of employment making the goods of peace. Surely there was no lack of desire, even of want, among Americans, despite our being the best fed, best clothed and best housed people in the world. There are large segments of the population to whom some of the most simple and ordinary comforts of civilized living are unknown; and there are other large segments of the nation for whom the medium comforts—lightly termed the "modest luxuries"—are far beyond reach. The great majority of men—we might truthfully say all men—yearn for the security that insures the health and happiness of to-day and guarantees freedom from want in the years of old age. Since men must work in order to earn and must earn in order to spend, it should not be difficult to bring these complementary longings—for employment and for security—into a working partnership, each person serving another in order that he may himself be served.

Reasoning by analogy—the process that makes it so easy to jump from the full employment provided by war to the highly desirable full employment that might be provided by peace—in this case hurdles an obstacle that is not easily disposed of. In war the government is the principal buyer of the goods, the demand for which creates full employment. It analyzes and plans the demand, it places the orders, it determines the conditions under which the goods it needs shall be made, it even trains some of those who must be employed at new tasks, and it provides—and can easily replace—the funds needed to gratify its wants. Despite all its complications, inefficiencies and ramifications, government buying in war time is a highly centralized, closely co-ordinated and tightly regulated process. The fact that all its buying and the widespread employment that follows in its wake stem from a single source and a single authority gives to war-begotten industrial activity a unity of purpose and direction that are not found in our peace-time economy.

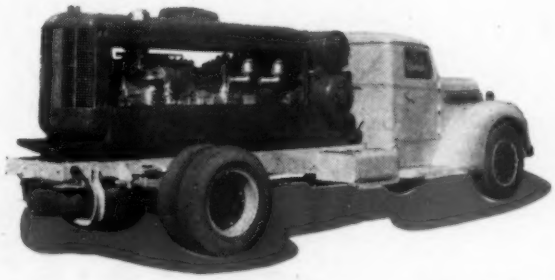
Most people—at least most of those reared in the American tradition—probably favor the attainment of the full employment they desire through the channels and by the processes of private enterprise. But in their readiness to believe that our normal peace-time economic organization can take over the responsibility by providing full employment that is so easily discharged by a war-time economy, they overlook the characteristic that distinguishes private enterprise from government-military enterprise. Private enterprise from its very nature does not have, and can not have, that unity of purpose, that co-ordination of even closely-related activities, that singleness of direction that typifies government-supported war-time industrial activity. If it had those characteristics, it would not be private enterprise. The existence of competition either free or limited is necessary to the continuation and success of private enterprise, and effective collaboration between all business men toward a realization of the goal of full employment is quite as unthinkable from the practical standpoint as it would be abhorrent from the legal standpoint. No one, as far as we are aware, has yet suggested the possibility—much less proposed a workable plan—of so modifying the normal competitive strivings of business that there might emerge a privately-conducted and truly-competitive peace-time economy geared to the single purpose of providing full employment as the principal and most-to-be-desired end-result. Many business men are agreed that full employment is the key to maximum profits and maximum national welfare, and they would give much to attain that desirable end, but they do not see how they can maintain the competition needed by successful private enterprise and at the same time practice the degree of collective co-operation required to provide full employment. It may, indeed, be impossible to reconcile the contradictions that they so clearly discern.

BUSINESS men who would like to share in the profits of full employment without sacrificing the rights and privileges of private enterprise will probably see in the Murray Committee report and the so-called "full-employment bill" which is to be presented to the next session of the Congress some evidence of a desire to find a solution. In our judgment no one could strive for a more practical end than the setting up of machinery that would insure the continuance of profit-making possibilities with a continually expanding outlook and coincident with widespread and stable employment and the assurance of economic security for all our people.

The next Congress might well consider whether it might not be wise to modify existing anti-trust legislation in a way that would legitimize the desire of business men to unite in common action for the good of the nation at large as well as of themselves.

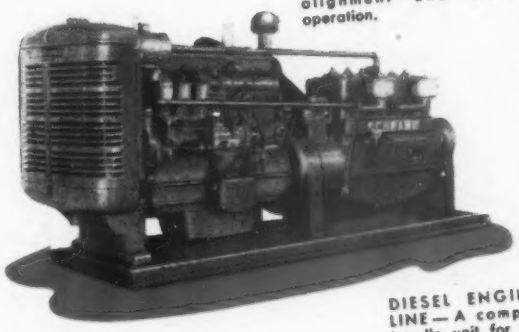


Schramm Compressors and engines are assembled with built-in clutch, mounted in frame as a complete unit for lifetime alignment and vibrationless operation.



Wood skid mounting with cross members and bolts for attaching to truck chassis.

BUILT-IN MOTOR DRIVE mounted with cooling unit. Furnished with approved motor starting controls, ready to hook up and go to work.



DIESEL ENGINE DRIVE-IN LINE—A compact, easy-to-handle unit for permanent service . . . Radiator water cooling.

How to get Compressed Air *where you want it . . .*

IN THE FIELD

IN THE SHOP

EMERGENCY CONSTRUCTION

There are so many jobs where compressed air is needed by quarries—and into this versatile picture fits Schramm Air Compressors. Schramm units—both portable and stationary—are extensively used by the utility field in general field service—steam plants—repair shops, etc.

They are compact, lightweight, and easy to start merely by pushing a button.

And they have these distinctive "under-the-hood" features: (1) completely water cooled to provide ideal performance both winter and summer (2) main bearings for every cylinder (3) mechanical intake valve (4) more cylinders and lighter parts (5) forced feed lubrication.

If you are not already using a Schramm, it will pay you to write today for illustrated bulletin AED-44.

SCHRAMM INC.

THE COMPRESSOR PEOPLE
WEST CHESTER
PENNSYLVANIA

Unexcelled for long life . . .
B&W Elverite Castings

ELVERITE A—A chilled iron product made from cold-blast charcoal iron. The mixtures are varied to obtain a chilled section of 1/8 to 2 1/2 inches in depth, depending upon the shape and use of the casting. Elverite A is made with a machinable gray iron back which gives the castings strength and resistance to shock. The chilled sections have a hardness of 500-550 Brinell.

ELVERITE C—An alloyed, heat-treated, chilled iron product made from a base mixture of charcoal iron. The sections back of the chilled areas are of such hardness that they must be finished by grinding. The chilled sections have a hardness of 675-725 Brinell.

For economical operation, specify Elverite.

BABCOCK & WILCOX

The Babcock & Wilcox Co.

85 Liberty Street • New York 6, N. Y.

C-61

PIT AND QUARRY

CHICAGO JANUARY, 1945

Kaiser Voluntarily Cuts Cement Prices for Northern Calif.

When Henry J. Kaiser recently cut the price of his Permanente cement voluntarily by 20 cents a barrel to northern California users he completely reversed a price situation that had prevailed on the Pacific Coast for many months.

The new northern California price is now $1.45 per barrel, f.o.b. mill. It had been $1.65 for a lengthy period. Meanwhile, in southern California, prices on a comparable basis are now $1.70 to $1.75 per barrel following a 20-cent-upward price adjustment allowed by the OPA, September 11 and made effective October 11. Thus, southern California prices are now 25 to 30 cents higher than those in northern California. A few months ago the northern California price was about 15 cents higher than that prevailing at plants in the south.

The northern zone takes in western Nevada. The southern California mills supply southern Nevada and Arizona at the prevailing southern California price.

When asked to comment on this announcement, one cement manufacturer, W. A. Wecker, president of the Marquette Cement Manufacturing Company, Chicago, said:

"It does not sound plausible to me. I have a very strong suspicion that the Permanente price cut ordered by Mr. Kaiser was brought about by a local situation, probably to stop the annoyance of price-cutting by some of his company's competitors. We in the middle west, who study our cost and income statements can find nothing now, either factual or even prospective, which justifies any change in the price of cement unless it be upward."

It has been pointed out that the Permanente increase equals the 20-cents-a-barrel increase authorized September 14 by the Office of Price Administration to cement manufacturers in the southwest and made effective October 14.

$20,000,000 Magnesium Plant to Halt Operations

The dolomite quarry which has been supplying raw material to the magnesium plant at Mead, Washington, has ceased operations and production at the plant will halt shortly, releasing 600 workers badly needed in the war effort in the Pacific northwest.

The Mead plant, built by the Defense Plant Corporation at a reported cost of $20,000,000, has been operated by the Electro-Metallurgical Company, a Union Carbide & Carbon subsidiary. It has a rated capacity of 2,000 tons of magnesium per month. Production began in April, 1943.

Coming Events

January 21-24, 1945—Chicago. 26th annual meeting, Associated Equipment Distributors, Edgewater Beach Hotel.

January 22-23, 1945—New York. Annual meeting, Board of Directors, National Sand and Gravel Association, Hotel New Yorker.

January 24-25, 1945—New York. Annual meeting, Board of Directors, National Ready Mixed Concrete Association, Hotel New Yorker.

January 29-31, 1945—New York. 28th annual convention, National Crushed Stone Association, Hotel New Yorker.

February 7-8, 1945 — Chicago. 40th annual meeting, Sand Lime Brick Association, Hotel Sherman.

February 12-14, 1945—St. Louis, Mo. Annual meeting, American Concrete Pipe Association, Statler Hotel.

February 18-22, 1945 — New York. Annual meeting, American Institute of Mining Engineers, Pennsylvania Hotel.

Gravel and Ready-Mix Assn's Cancel Sessions Directors Will Meet

The National Sand and Gravel Association and the National Ready-Mixed Concrete Association have cancelled their formal meeting programs scheduled to be held in New York this month. V. P. Ahearn, executive secretary of the associations, telegraphed Pit and Quarry on January 8 explaining that the action was taken in deference to the spirit of the O.D.T.'s recent edict in regard to conventions, despite the fact that the meetings scheduled would have been concluded before the February first deadline specified by the O.D.T.

The board of directors of the sand and gravel group will meet as scheduled at the Hotel New Yorker on January 22 and 23, and the directors of the ready-mixed-concrete oranization will meet at the same place on January 24 and 25.

"Active and associate memberships are being invited to attend these board meetings," Mr. Ahern concluded in his wire.

Penna. Stone Producers' Annual Meet Jan. 17

The annual meeting of the Pennsylvania Stone Producers' Association, Inc., will be held Wednesday, January 17, 1945, at 10:30 A. M. in the Hotel Penn Harris, Harrisburg, Pennsylvania. The program will include the election of officers, the election of the board of directors, and the president's message, the treasurer's and the general manager's report. This portion of the program will be conducted during the morning session. The secretary of highways, John U. Shroyer, and a number of others will be guests for the luncheon. Chief Engineer John L. Herber, as well as Research Engineer William Herman, will speak briefly on highway work immediately after the luncheon.

Barney Ireland of Birmingham Slag Co. Passes Away Suddenly

The many friends of C. B. ("Barney") Ireland, vice-president of the Birmingham Slag Company, Birmingham, Alabama, will be grieved to learn of his unexpected passing on December 26. Few men have had such a wide acquaintanceship, especially among producers of sand

C. B. ("Barney") Ireland

and gravel, slag and ready-mixed concrete. He was also president of the Montgomery Gravel Company and the Roquemore Gravel & Slag Company, Montgomery, Alabama, and had been active in the affairs of the national associations of the gravel, slag and concrete industries as well as in Birmingham civic, fraternal and social affairs.

Mr. Ireland was born in Van Wert, Ohio, in 1893 and graduated from Ohio Wesleyan University and the Wharton School of Finance of the University of Pennsylvania. He had been associated with the Birmingham Slag Company since 1916 when he, with his father and two brothers, purchased a controlling interest in the company.

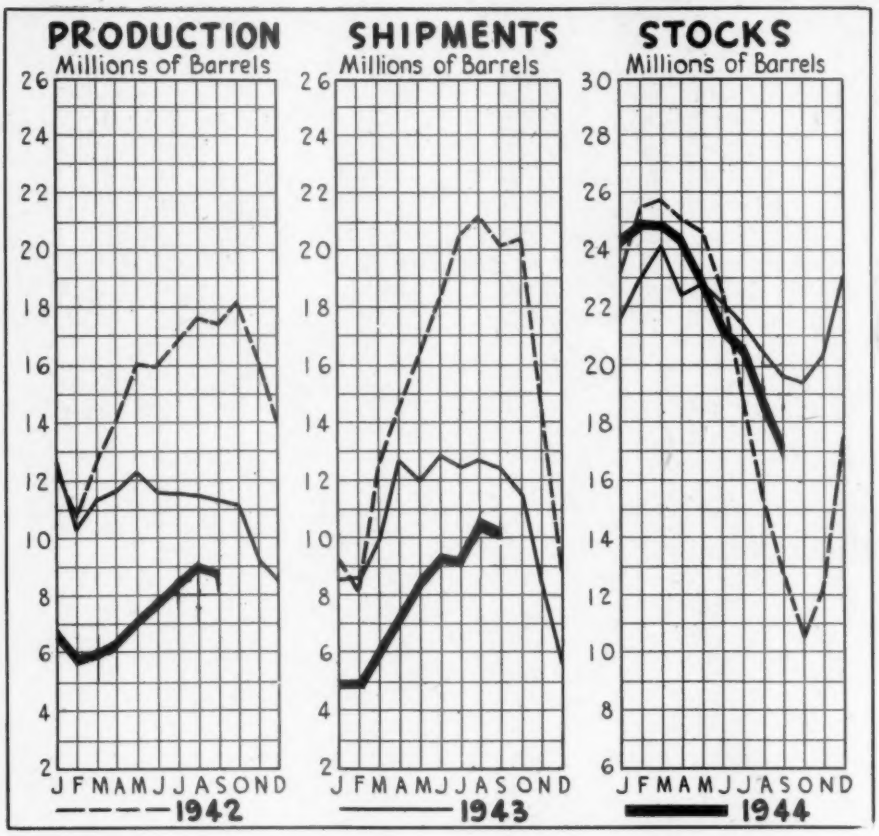
Survivors include the widow, two sons, a daughter, and a brother, C. Eugene Ireland, president of the Birmingham Slag Company.

Dry Ice Used to Blow Out 540-Foot Well

The Johnson Sand & Gravel Company of Roy, Utah, recently took a lesson from the oil-drilling industry to blow out a 540-foot well on its property.

"Dry ice"—solid carbon dioxide —150 pounds of it, was dropped down the well to blow sand and débris from the screen at the bottom. The "ice" by rapid evaporation created sufficient pressure to throw sand and débris into the air, enlarging the hole to allow the water to enter. A 1,100-g.p.m. pump is being installed to bring up the water which will be used for washing purposes at the sand-and-gravel plant.

L. G. Johnson of Logan, Utah, and John J. O'Brien of Salt Lake City are co-owners of the gravel company.

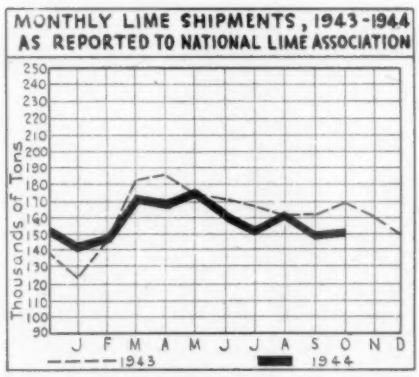


In September, 1944 The Portland cement industry produced 8,746,000 barrels of cement, shipped 10,221,000 barrels and had in stock at the end of the month 17,000,000 barrels, according to the Bureau of Mines. Production was 23 per cent. below output in the corresponding month of 1943. Shipments were 17 per cent. below those of September 1943. Stocks of finished cement at mills on September 30 were 8 per cent. below those at the end of August.

Seek Authority to Work Arkansas Bauxite Mines

A delegation of Arkansas Congressmen, headed by Senator McClellan, has appealed to Interior Secretary Harold L. Ickes to authorize the mining of a bauxite deposit valued at approximately $3,000,000, in six mines near Little Rock. Mining of bauxite was stopped by the War Production Board and the Reconstruction Finance Corporation after a government stock pile had been built up.

The delegation advised Mr. Ickes that the deposit near Little Rock will become a total loss to the nation if it is not mined before rain water fills the open-shaft mines.



According to data collected by the National Lime Association, 55 companies in October, 1944, shipped 151,768 tons of lime (101,270 quicklime; 50,498 hydrate). Reporting companies represent 43.2 per cent. of the association members' total capacity of record. Based on PIT AND QUARRY'S estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 380,000 tons. Shipments of lime by users for October, 1944, were:

Use	Quicklime (tons)	Hydrate (tons)
Agricultural	2,159	11,679
Building	9,474	13,786
Chemical	89,637	25,033
Total	101,270	50,498

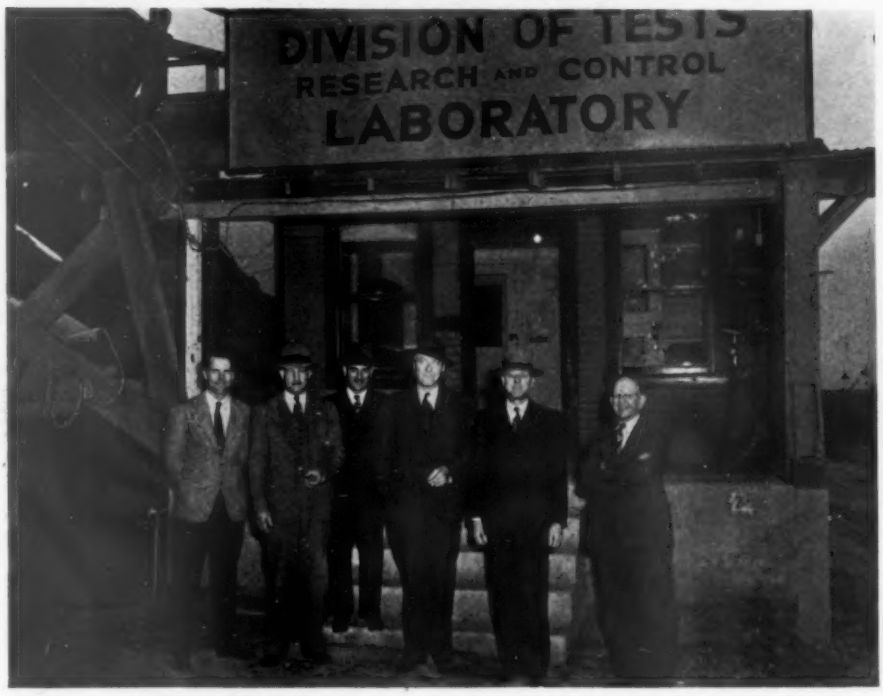
American Industry To Mobilize Energy Quickly After the War

American industry is definitely planning to mobilize all along the commercial front just as soon as it is released from the war front, inquiries at the 16th National Exposition of Power and Mechanical Engineering in Madison Square Garden, New York, revealed recently. The answer to demands from many quarters that industry re-enter peacetime pursuits as quickly as possible after peace is declared would seem from these indications to be that industry will be well prepared. Plans to that end are known to be already far advanced; but their timing, of necessity, remains indefinite.

The Exposition which ran from Monday, November 13, through Saturday, December 2, was the sixteenth in the biennial series inaugurated at the time of World War I and like its predecessors was under the management of the International Exposition Company, of which Charles F. Roth is president. It was sponsored by an advisory committee composed of prominent consulting engineers and engineering executives representing a number of different classes of power producing and consuming interests.

The scope of the field in which electrical indicating and control instruments are applied is reflected by the set-up of one exhibit. Latest developments in the distant-reading instrument field include further refinements in electronic amplification of signals derived from highly sensitive detecting elements. For example, one exhibitor showed a "hazegauge" for smokestack application which reacts to even a very slight change from the normal density of the products of combustion. A war application of this instrument is to signal to the fire rooms of ships, smoke emissions from the funnels, as a precaution against enemy detection of convoys. The commercial application, having a business interest for a greater number of visitors at the show, is the use of such a gauge for the more efficient control of combustion. Installed in a power plant, the instrument "telegraphs" to the engineer's desk or furnace control station conditions indicating excess smoke (meaning too much fuel) or too thin gases, indicating excess air. In a complete integrated installation, the amplified response to color-change in the uptake reacts through relays to alter the draft or change the feed rate of the stoker, as the case may be.

Stanton Walker, Engineering Director, Natl. Sand & Gravel Assn., with Some Pacific Coast Friends



While on his recent visit to the Pacific Coast, Stanton Walker, engineering director of the National Sand & Gravel Association and the National Ready Mixed Concrete Association, posed for this picture in front of the main laboratory of the Consolidated Rock Products Company at Los Angeles. The other five men in the picture are all closely connected with Consolidated's research program. Left to right: Everett Jumper, testing and control engineer; Harry Jumper, specification engineer; Arthur Howland, structural engineer; Mr. Walker; R. C. Griffin, production manager; C. A. G. Weymouth, research engineer.

As at previous Power Shows, a substantial number of exhibitors revealed the latest developments in analytical and testing instruments suitable for research or the production control laboratory. An important use for such equipment is in testing plant efficiencies, and one exhibitor pointed out during the week that such analyses are particularly valuable at the present time as an aid in completing plans and specifications for reconversion to normal activities when the pressure for war production begins to be relaxed.

Minnesota Operates 438 Gravel Pits in State

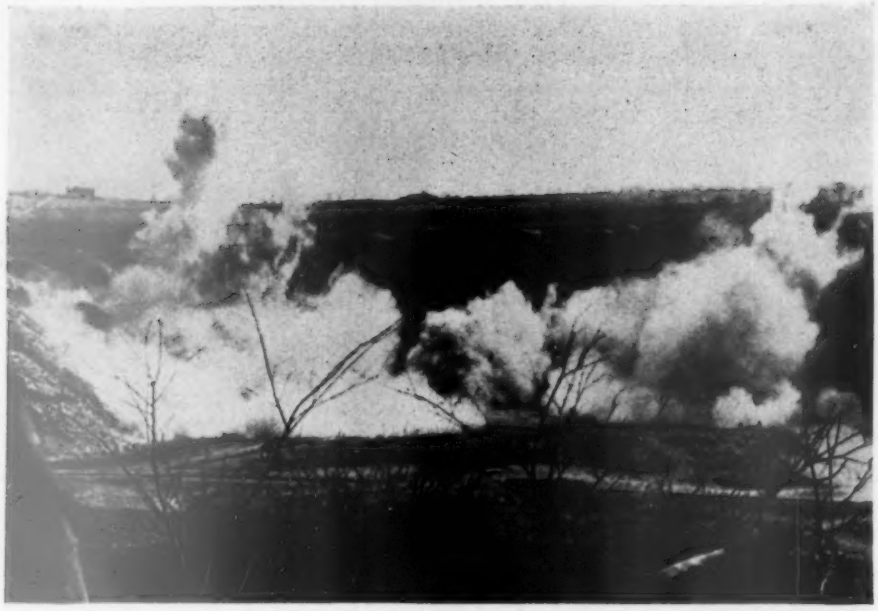
The State of Minnesota is in the gravel business on a large scale, according to figures prepared for the biennial report of the Department of Highways. The state now owns 438 gravel pits, totaling 4,774 acres and situated in 69 counties. The estimated amount of material contained in these pits on July 1, 1944, was 13,086,000 cubic yards, purchased at an approximate cost of 2.7 cents per cubic yard. During the biennium the department tested and surveyed 135 locations and purchased 33 gravel pits.

A total of 4,154,556 cubic yards of gravel was used by the department's construction and maintenance divisions in the two year period ended June 30, 1944. Of this amount 1,538,706 yards came from state-owned pits and 2,625,848 yards from leased pits. This does not include gravel furnished by contractors on projects where contract price includes all materials.

A 5-mile tramway, now under construction at the Keystone workings of the Northwest Magnesite Company in the state of Washington, will be completed within a few months. It will carry magnesite ore to the company's new heavy-media concentration-and-flotation plant.

The tramway was designed and is being constructed by the Riblet Tramway Company.

New equipment soon to be installed at the Rocky Ford Limestone Company, Lincoln, Illinois, will increase the plant's agstone capacity from 900 tons to 3,500 tons per day.



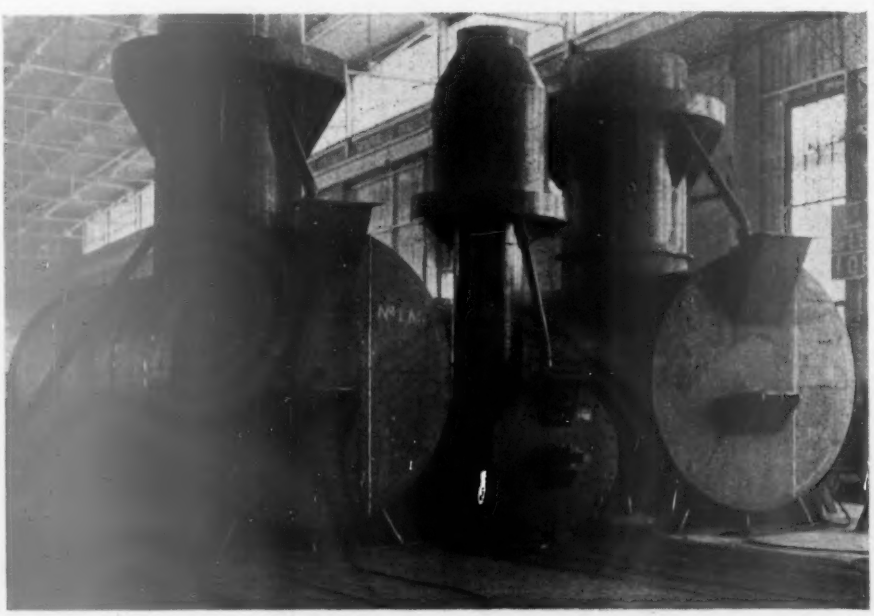
After many months' preparation, including drilling, loading and wiring, another big shot of stone was dislodged at Union Furnace quarry, a property of the Warner Company, Philadelphia, bringing down approximately 250,000 tons of limestone.

Fifty-nine thousand pounds of dynamite were used to make the blast. There were 31 holes 176 feet deep and drilled approximately 35 feet back from the face. Prior to the blast many precautions were necessary, such as having the four-track system of the PRR cleared at that point, having all traffic stopped on the highway, and all persons removed from the immediate vicinity.

The preparations were under the supervision of Jess Willard, plant superintendent, and his assistant, Jess Stringer. The blast was supervised by a technical engineer for the du Pont Company. The photo above shows the quarry just after the "big shot" went off.

Permanente Orders Two Huge Hydrators

The Permanente Cement Company has ordered for the development of its Pacific Coast lime-manufacturing facilities two large Kuntz continuous hydrators after using one of smaller (5-ton) capacity experimentally. The accompanying picture shows the two large machines and, between them, a 5-ton unit before shipment from the plant of their manufacturer, Lime & Hydrate Plants Company, York, Pennsylvania. According to William J. Kuntz, president of the company that made them, the two large machines are the largest-capacity continuous hydrators ever built in this or any other country.



The two large hydrators with a 5-ton unit between them.

Will Soon Mine Aluminum Silicate in New Deposit

Production of aluminum silicate is scheduled soon from a huge pyrophyllite deposit 20 miles north of Bishop, California, by Huntley Mines, it has been announced by Wright A. Huntley, principal owner. A four-mile road has been built to the property, bulldozers are removing overburden from the deposit, and mining will be done in open pits with power shovels.

Construction of a mill and other units for crushing, sacking and handling of the material is planned. A camp has been established and machinery is being installed. Huntley reports the prophyllite contains white and gray grades, in demand for manufacture of insecticide dusting materials. Clark E. Demorest of Bishop is secretary of the company.

Huntley Mines operates the White Eagle and other talc mines in the Saline Valley region. Selected talc shipped to California plants is reported selling at about $15 per ton.

New Agstone Company Organized in Oklahoma

The Oklahoma Lime Products Company, owned by William S. Brantingham, R. O. Wilson and Kenneth J. Cookson, has started operations at its quarry west of Uncas, Oklahoma. The new company was organized last April, but actual production has been delayed due to the difficulty of obtaining equipment.

The full capacity of the pulverizing plant will be devoted to agricultural limestone, and it is anticipated that production will exceed 300 tons per day. The company has contracted to furnish 20,000 tons of agstone for the A.A.A. program in Kay County, Oklahoma.

Nat'l Gypsum Purchases Kimbalton Lime Company

The National Gypsum Company, Buffalo, N. Y., has concluded an agreement for the purchase of the Kimbalton Lime Company of Shawsville, Va., Melvin H. Baker, National Gypsum president, announced. The company has applied to the Securities & Exchange Commission for permission to issue 24,119 shares of common stock to be given in partial payment for the Virginia company, Mr. Baker said.

WASHINGTON NEWS LETTER

THE military and political developments scheduled for the year ahead overshadow even the extremely significant events of the past year. Included on the 1945 calendar are the defeat and occupation of Germany, the peace conference and the establishment of the international peace organization, the rehabilitation and reconstruction of Europe, rebuilding of world commerce, reconversion of a substantial part of the economies of the Allied nations from war to peace, and the beginning of a long hard military campaign on the Asiatic mainland. The Pacific war has not been neglected by any means, as is pointed out in General Somervell's recent annual report which shows that 40 per cent. of United States Army cargo and 30 per cent. of our 5,000,000 troops overseas have gone to Pacific battle areas. But the difficulty of striking directly at the Japanese islands, when considered with the extensive gains made by the enemy in China and the well-known political disunity of that country, plus the fact that Japanese man-power resources have as yet hardly been tapped, have fostered the spreading opinion that the Pacific war will last well into 1946.

★ ★ ★ ★

A foretaste of some of the foreign-policy problems we shall face in the year ahead was provided on a small scale during the past month by the political difficulties in liberated Europe. Nothing could have pointed up more directly the crucial role which our State Department will have to play in international affairs. The delicate task of harmonizing such potentially discordant factors as power politics, the maintenance of favorable relations with our Allies, maximum support of the military effort, and living up to stated war aims, obviously calls for the best combination of talents which can be provided, and this is probably one of the simpler of the complex problems which will have to be resolved in the near future. For this reason the President's recent nominations to the key positions in the conduct of foreign affairs were something of a disappointment to many people. Although part of the opposition which developed in the Senate was politically motivated, most of it represented a sincerely unfavorable reaction to the caliber of some of the President's choices. It is of course true that the President intends to play an important personal role in international negotiations, and to act, to a large extent, as his own Secretary of State. While applauding this, many of his most ardent supporters feel that he has failed in this case to appreciate the immense policy-making powers inherent in the administration of everyday foreign relations.

★ ★ ★ ★

One of the most perplexing jobs ahead is the co-ordination of the trade and political policies of the United States in the international sphere. The decision to provide for review of foreign economic affairs in the reorganization of the State Department is therefore generally considered wise. However, there still exists the need for a separate administrative agency to integrate the foreign-trade functions now distributed throughout the federal government. An independent cabinet department has been suggested for this purpose, and details of the plan are now being worked out. As a recent report of the National Planning Association has pointed out, the development and maintenance of a high level of export trade from this country will inevitably depend not only upon the development and promotion of foreign markets for American products, but also upon the ability of the foreign markets to pay for their purchases, and the latter depends in turn largely upon our policies on imports, tariffs and other trade barriers, foreign credits, exchange stabilization, and long-term investments abroad. The interrelationship of domestic and international economic problems may be seen from the fact that in all the post-war planning done to date, a doubling or tripling of United States exports from the pre-war level is regarded as a *sine qua non* of full employment at home.

★ ★ ★ ★

The Office of War Mobilization and Reconversion, which was set up by act of the Congress to co-ordinate military production needs with reconversion activities, has finally begun to function with the appointment of several top aides to Director Byrnes. For the time being the restriction of civilian production activity to present levels has been deemed advisable in order to stem what was felt to be a dangerous trend toward complacency on the part of the public as to the imminent termination of hostilities in Europe. Recent changes in man-power policies and the decision to minimize labor turnover in war plants by using the threat of military service as a deterrent are also part of this approach. The renewed emphasis of the armed forces on war production needs and the desire to stimulate a higher degree of war-consciousness in the public mind reflect in large measure a reaction from the excessive optimism of last fall when our armies were sweeping through Belgium and France, and the best military opinion anticipated victory before the year's end. Despite the considerable publicity, war production schedules have not been increased significantly, nor has actual volume of output overall fallen short of schedules by an important margin.

★ ★ ★ ★

As as clearly indicated by the investigation of the War Production Board into the "critical programs," recently made public as the Batcheller report, the deficit areas of war production, important as they are, represent but a very minor part of total munitions production. Perhaps the most significant part of this report is the considered statement that to meet the critical production deficits will require rifle rather than shotgun techniques, a distinction which is still not fully appreciated by the War and Navy Departments.

Crushing Plant Employs German War Prisoners

W. H. Baker of Macomb, Illinois, operator of a rock-crushing plant near Colchester, reports that he is employing ten German war prisoners from Camp Ellis. Mr. Baker operates a crusher which he purchased from the McDonough County highway department about a year ago, and produces gravel for townships and the county highway department. He pays the government seventy-five cents an hour for the work of the prisoners. They continue to get only the usual eighty cents a day allowance in provisions at the camp for their work.

LABORATORY EQUIPMENT.—The number of types of laboratory equipment that may be sold or delivered only upon authorization of the War Production Board has been reduced through an amendment to Order L-144, issued October 21, by the W.P.B.

Only the preference ratings assigned on the approved applications (Form WPB-1319) may be used in purchasing these types of laboratory equipment, enumerated in List A of the order. Substitution of a different model from the one authorized, whether made by the same manufacturer or a different one, is prohibited.

Formerly purchasers were permitted to use other preference ratings to which they were entitled under other orders and regulations, if they so desired. Rating for items in List A are assigned on Form WPB-1319 in accordance with the specific use to which the equipment is to be put, Safety and Technical Equipment Division officials explained.

Types of laboratory equipment subject to these controls are those which are in short supply. They are:

Analytical balances (sensitivity 1/20 milligram or more sensitive); centrifuges (having a value of more than $80 each); hydrogen ion meters (electrometric type); metalloscopes and metallographs; microscopes, stereoscopic wide field; Abbe refractometers; spectrographs (quartz), spectrophotometers (quartz) and spectrometers (infra red); and vacuum pumps (one micron or higher vacuum).

No W.P.B. authorization is required for purchasing items of laboratory equipment not in List A.

The text of the order follows, changes being indicated by underscoring.

PART 3296—SAFETY AND TECHNICAL EQUIPMENT

[General Limitation Order L-144, as Amended Oct. 21, 1944]

LABORATORY EQUIPMENT

The fulfillment of requirements for the defense of the United States has created shortages in the supplies of laboratory equipment and the materials entering into the manufacture thereof for the national defense, for private account, and for export; and the following order is deemed necessary and appropriate in the public interest and to promote the national defense:

§ 3296.56 *General Limitation Order L-144*—(a) *Definitions.* For the purposes of this order:

(1) "Laboratory equipment" means any apparatus, instrument, appliance, device, equipment, or part thereof, designed primarily for use in laboratories. However, the restrictions of this order cover only those items of laboratory equipment which are on List A, attached hereto. (The language at the top of List A should be examined closely to determine what items are on List A.)

(2) "Distributor" means any person located in the United States, its territories or possessions, or the Dominion of Canada, who purchases laboratory equipment for the purpose of resale.

(3) [Deleted Oct. 9, 1943]

(b) *Restrictions on the delivery of laboratory equipment.* (1) No manufacturer or distributor shall deliver any item of laboratory equipment on List A of this order to any person, other than a distributor, unless such delivery has been specifically authorized and given a preference rating by the War Production Board on Form WPB-1319.

(2) No manufacturer or distributor shall deliver any item on List A of this order directly to a user, in behalf of a distributor, until the distributor has extended to that person the user's WPB-1319 case number authorization and preference rating.

(c) *Restrictions on accepting delivery of laboratory equipment.* No person other than a distributor shall accept delivery of any item of laboratory equipment on List A of this order from a manufacturer or distributor unless such delivery has been specifically authorized and given a preference rating by the War Production Board on Form WPB-1319.

(d) *Authorizations on Form WPB-1319 and extensions of such authorizations.* (1) Each person seeking authorization, pursuant to paragraph (c) of this order, to receive laboratory equipment shall prepare Form WPB-1319 in the manner prescribed therein and shall file such form with the War Production Board, Washington 25, D. C., Ref: L-144. (Copies of Form WPB-1319 may be obtained at the local offices of the War Production Board.)

(2) Any person receiving specific authorization and a rating on Form WPB-1319 shall notify his supplier of such authorization and rating by furnishing him with a certification in substantially the following form:

The undersigned hereby certifies that he has been specifically authorized on Form WPB-1319, under the provisions of Order L-144, to receive delivery of the laboratory equipment described in his order #....., dated ..... and to apply Preference Rating.....
Case No. .....
Name.....
Date..... By.....
Authorized Official

Any such certification shall be signed by an authorized official, either manually or as provided in Priorities Regulation 7, and shall constitute a representation to the supplier and to the War Production Board of the facts certified therein. The supplier may rely upon such representation, unless he knows or has reason to believe such representation to be false. The standard form of certification contained in Priorities Regulation 7 may not be used.

(e) *Restrictions on the use of preference ratings.* When granting specific authorizations to deliver or accept delivery of laboratory equipment on Form WPB-1319 pursuant to paragraphs (b) and (c) of this order, the War Production Board will also assign preference ratings to the authorized deliveries on such form. Only the preference rating assigned on Form WPB-1319 may be used to get any item on List A of this order, and preference ratings assigned by any other preference rating certificate or any order or regulation of the War Production Board may not be used. Any preference rating so assigned on Form WPB-1319 shall be applied and extended only in accordance with the terms of Priorities Regulation 3.

(f) *Substitutions.* No person receiving authorization on Form WPB-1319 for an item on List A shall use the authorization for any other List A item; nor shall he substitute a different model for the one authorized, whether made by the same or a different manufacturer.

(g) *Reports by distributors.* Whenever the War Production Board shall so direct, any distributor shall give to the War Production Board in writing complete information regarding his inventory and all transactions in any item of laboratory equipment, subject to the approval of the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

(h) *Reports by manufacturers.* Whenever the War Production Board shall so direct, any manufacturer of any item of laboratory equipment shall file a report on Form WPB-3449, setting forth complete information regarding his inventory, production, deliveries and unfilled orders as indicated in the report form, subject to the approval of the Bureau of the Budget in accordance with the Federal Reports Act of 1942.

NOTE: Paragraphs (i), (j), (k), (l) and (m), formerly (f), (g), (h), (i) and (j), redesignated, Oct. 21, 1944.

(i) *Records.* All persons affected by this order shall keep and preserve for not less than two years accurate and complete records of all sales, deliveries and purchases of laboratory equipment.

(j) *Applicability of regulations.* This order and all transactions affected thereby are subject to all applicable regulations of the War Production Board, as amended from time to time.

(k) *Appeals.* Any appeal from the provisions of this order shall be made by filing a letter in triplicate, referring to the particular provision appealed from and stating fully the grounds of the appeal.

(l) *Violations and false statements.* Any person who wilfully violates any provision of this order, or who, in connection with this order, wilfully conceals a material fact or furnishes false information to any department or agency of the United States is guilty of a crime and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using, material under priority control and may be deprived of priorities assistance.

(m) *Communications with the War Production Board.* All communications concerning this order shall, unless otherwise directed, be addressed to the War Production Board, Safety and Technical Equipment Division, Washington 25, D. C. Ref.: L-144.

The above paragraph (a) (2) supersedes Interpretation 1 of the order, issued July 17, 1943.

Issued this 21st day of October 1944.

WAR PRODUCTION BOARD,
By J. JOSEPH WHELAN,
Recording Secretary.

LIST A

Both the delivery and the acceptance of delivery of items on List A are subject to the restrictions set forth in paragraphs (b), (c) and (e) of this order. List A includes only the items listed below, and only those models which are designed primarily for use in laboratories. Any item of laboratory equipment which is not on this list does not require the filing of form WPB-1319. Used equipment is not included nor are parts, accessories or attachments when sold separately.

Analytical balances (sensitivity 1/20 mg. or more sensitive).

Centrifuges (having a value, individually, of more than $80).

Hydrogen ion meters (electrometric type).

Metalloscopes and metallographs.

Microscopes, stereoscopic wide field.

Refractometers, abbe.

Spectographs (quartz), spectophotometers (quartz) and spectrometers (infrared).

Vacuum pumps (1 micron or higher vacuum).

Issued this 21st day of October 1944.

WAR PRODUCTION BOARD,
By J. JOSEPH WHELAN,
Recording Secretary.

TRUCK TIRES.—Present indications are that commercial-motor-vehicle operators will receive only about one-half of their estimated tire requirements during the first quarter of 1945, Col. J. Monroe Johnson, director of the Office of Defense Transportation, announced December 17. The urgent military demand for tires for combat vehicles, trucks, jeeps and other military transport was given as the reason for the drastic cut. Commenting on the expected reduction, Colonel Johnson declared the tire situation "presents a challenge to all truck, bus and taxi operators to make the greatest effort possible to continue and to step up their tire conservation activities."

As claimant agency for essential commercial-motor-vehicle transportation, the O.D.T. has requested 2,241,889 tires for new vehicle and replacement purposes for January, February and March, 1945. Current negotiations, Colonel Johnson said, indicate that the first quarter allocation may fall short of this figure by close to 1,000,000 tires.

AMERICA'S CITIES FACE THE POST-WAR PERIOD WITH PLANS

Over-all View of Municipal Public-Works Programs

another P AND Q exclusive

PRODUCERS of aggregates, cement, lime, gypsum and the other nonmetallic minerals that enter into the construction of streets, highways, and other public works undertaken by government agencies are deeply interested in the post-war plans of American cities large and small. The extent to which such communities have committed themselves to post-war expenditures to be met from present funds and proposed taxation is a source of satisfaction not only to their own citizens but to the nation as a whole. There is no evidence whatever that our cities have either overlooked or disregarded the problems and obligations of providing post-war employment. Within the means at their command and the tax-levying powers available to them they have already accomplished much more than many of those who clamored most loudly for government participation in the responsibilities of maintaining a stable economic organization after the war had believed possible. The programs of cities of various sizes that have been announced as already adopted or only in the discussion stage show wide differences in the extent to which their responsibilities have been recognized as well as great disparities in the relationship of their proposed programs to their per capita wealth.

Numerous public-spirited agencies have made studies in recent months of the ability of American cities to contribute materially to post-war economic stability through the construction of public works. The Federal Works Agency in collaboration with the Bureau of the Census has prepared, at the request of the Special Committee on Post-War Economic Policy and Planning of the House of Representatives, an exhaustive study of the plans of cities of all sizes and has spread its investigation into other government agencies, such as states and counties.

The Committee for Economic Development, with chairmen in many key cities throughout the country, has examined the capacity of various communities to participate in a national movement for the establishment and maintenance of a stabilized post-war economy, and its local committee chairmen have worked ceaselessly in an effort to increase the local sense of civic responsibility for the solution of a problem that is nationwide in its effects and to raise the money necessary to initiate studies of practical suggestions and to carry them to successful conclusion.

The International City Managers' Association, too, has made, as part of its ever-continuing studies of American municipal policy and practice, a thorough investigation of

IN THIS SECTION

Page

The general over-all picture:

STAGE OF PLAN PREPARATION—5 largest cities 79
ESTIMATED COST, TYPES OF PROJECTS AND STAGE OF PLAN PREPARATION—593 cities of all sizes 80
TYPES OF PROJECTS—513 cities of various sizes 82

Selected individual cities:

ESTIMATED COST AND TYPES OF PROJECTS:
6 Cities from 500,000 to 1,000,000 population 84
43 Cities from 100,000 to 500,000 population 85
47 Cities from 50,000 to 100,000 population 86
142 Cities from 10,000 to 50,000 population 89

Special studies: the "Big Five":

CHICAGO 93
DETROIT 96
LOS ANGELES 99
NEW YORK 101
PHILADELPHIA 105

STAGE OF POST-WAR PLAN PREPARATION OF FIVE LARGEST CITIES

(Data from Federal Works Agency, July, 1944)

City	Number and Cost of Projects by Stage of Plan Preparation									
	Idea Stage		Preliminary Stage		Design Stage		Completed Stage		Totals	
	Projects	Cost	Projects	Cost	Projects	Cost	Projects	Cost	Projects	Cost
Chicago	179	$ 291,824,000	214	$ 731,429,000	126	$313,982,000	92	$ 37,085,000	611	$1,374,320,000
Detroit	37	264,392,000	69	59,769,000	118	119,929,000	37	23,023,000	261	467,113,000
Los Angeles	1,386	715,241,000	100	36,815,000	134	51,860,000	177	13,060,000	1,797	816,976,000
New York	165	278,688,000	114	457,267,000	137	247,930,000	219	282,917,000	635	1,266,802,000
Philadelphia	57	78,589,000	314	253,468,000	.....	.....	2	14,656,000	373	346,713,000
Totals	1,824	$1,628,734,000	811	$1,538,748,000	515	$733,701,000	527	$370,741,000	3,677	$4,271,924,000

POST-WAR PUBLIC WORKS - *Municipal*

PROPOSED POST-WAR PUBLIC-WORKS PROGRAMS OF 593 CITIES BY SIZE OF CITIES, TYPES OF PROJECTS, AND STAGE OF PLAN PREPARATION

(Compiled from data gathered by Federal Works Agency)

Stage of Plan Preparation and Types of Projects	Estimated Cost of Proposed Public Works (Excluding Land) — Population Groups and Number of Cities in Each Group					
	83 Cities Over 100,000 Population	80 Cities 50,000 to 100,000 Population	118 Cities 25,000 to 50,000 Population	262 Cities 10,000 to 25,000 Population	50 Cities 2,500 to 10,000 Population	593 Cities 2,500 Population and Over
Plans Completed:						
Highways, roads, streets	$ 87,290,000	$ 7,746,000	$ 6,591,000	$ 10,199,000	$ 1,200,000	$ 113,026,000
Bridges, viaducts, grade sep	55,160,000	7,135,000	643,000	345,000	151,000	63,434,000
Airports, terminals, strips	9,474,000	787,000	550,000	5,306,000	10,000	16,127,000
Sewers, water, sanitation	158,943,000	11,528,000	16,900,000	17,541,000	998,000	205,910,000
Schools, etc	60,127,000	3,496,000	1,765,000	2,806,000	.....	68,194,000
Hospitals and health	17,999,000	2,091,000	1,420,000	565,000	155,000	22,230,000
Other public buildings	21,125,000	3,079,000	713,000	1,822,000	149,000	26,888,000
Parks and other recreation	24,915,000	950,000	1,192,000	1,258,000	1,000	28,316,000
Miscellaneous public facilities	112,173,000	5,677,000	1,703,000	1,936,000	159,000	121,648,000
Totals	$ 547,206,000	$ 42,489,000	$ 31,477,000	$ 41,778,000	$ 2,823,000	$ 665,773,000
Plans in Design Stage:						
Highways, roads, streets	$ 164,143,000	$ 19,611,000	$ 9,348,000	$ 13,753,000	$ 1,161,000	$ 208,016,000
Bridges, viaducts, grade sep	65,435,000	1,045,000	2,267,000	3,311,000	11,000	72,069,000
Airports, terminals, strips	31,044,000	3,340,000	3,039,000	2,418,000	1,000,000	40,841,000
Sewers, water, sanitation	346,240,000	27,554,000	22,704,000	21,812,000	1,338,000	419,648,000
Schools, etc	85,228,000	5,205,000	5,775,000	3,023,000	320,000	99,551,000
Hospitals and health	33,676,000	1,056,000	430,000	745,000	200,000	36,107,000
Other public buildings	23,294,000	5,032,000	3,336,000	4,171,000	232,000	36,065,000
Parks and other recreation	47,463,000	2,959,000	2,844,000	2,616,000	83,000	55,965,000
Miscellaneous public facilities	231,577,000	9,336,000	3,214,000	2,939,000	105,000	247,171,000
Totals	$1,028,100,000	$ 75,138,000	$ 52,957,000	$ 54,788,000	$ 4,450,000	1,215,433,000
Plans in Preliminary Stage:						
Highways, roads, streets	$ 397,607,000	$ 35,546,000	$ 22,962,000	$ 14,717,000	$ 505,000	$ 471,337,000
Bridges, viaducts, grade sep	165,361,000	29,322,000	7,213,000	2,949,000	15,000	204,860,000
Airports, terminals, strips	108,030,000	15,915,000	2,765,000	5,608,000	97,000	132,415,000
Sewers, water, sanitation	603,255,000	54,968,000	38,060,000	35,870,000	3,652,000	735,805,000
Schools, etc	159,463,000	5,675,000	9,044,000	6,416,000	1,170,000	181,768,000
Hospitals and health	63,386,000	1,217,000	2,852,000	3,375,000	450,000	71,280,000
Other public buildings	60,293,000	8,393,000	7,267,000	4,998,000	695,000	81,646,000
Parks and other recreation	102,558,000	4,142,000	7,039,000	4,906,000	358,000	119,003,000
Miscellaneous public facilities	514,661,000	15,988,000	7,000,000	10,565,000	194,000	548,408,000
Totals	$2,174,614,000	$ 171,166,000	$ 104,202,000	$ 89,404,000	$ 7,136,000	$2,546,522,000
Plans in Idea Stage:						
Highways, roads, streets	$ 700,279,000	$ 37,016,000	$ 46,145,000	$ 32,104,000	$ 4,312,000	$ 819,856,000
Bridges, viaducts, grade sep	175,718,000	23,348,000	28,776,000	15,521,000	172,000	243,535,000
Airports, terminals, strips	108,741,000	38,681,000	8,274,000	7,276,000	1,759,000	164,731,000
Sewers, water, sanitation	472,831,000	76,465,000	468,002,000	35,112,000	3,213,000	1,055,623,000
Schools, etc	194,260,000	33,220,000	32,509,000	13,143,000	1,115,000	274,247,000
Hospitals and health	72,838,000	7,904,000	2,689,000	3,710,000	150,000	87,291,000
Other public buildings	179,618,000	24,814,000	19,562,000	18,923,000	1,580,000	244,497,000
Parks and other recreation	120,549,000	17,243,000	15,502,000	9,138,000	1,459,000	163,891,000
Miscellaneous public facilities	408,232,000	21,081,000	26,246,000	13,105,000	2,277,000	470,941,000
Totals	$2,433,066,000	$ 279,772,000	$ 647,705,000	$ 148,032,000	$ 16,037,000	$3,524,612,000
Totals—All Plans:						
Highways, roads, streets	$1,349,319,000	$ 99,919,000	$ 85,046,000	$ 70,773,000	$ 7,178,000	$1,612,235,000
Bridges, viaducts, grade sep	461,674,000	60,850,000	38,899,000	22,126,000	349,000	583,898,000
Airports, terminals, strips	257,289,000	58,723,000	14,628,000	20,608,000	2,866,000	354,114,000
Sewers, water sanitation	1,581,269,000	160,515,000	545,666,000	110,335,000	9,201,000	2,416,986,000
Schools, etc	499,078,000	47,596,000	49,093,000	25,388,000	2,605,000	623,760,000
Hospitals and health	187,899,000	12,268,000	7,391,000	8,395,000	955,000	216,908,000
Other public buildings	284,330,000	41,318,000	30,878,000	29,914,000	2,656,000	389,096,000
Parks and other recreation	295,485,000	25,294,000	26,577,000	17,918,000	1,901,000	367,175,000
Miscellaneous public facilities	1,166,643,000	52,082,000	38,163,000	28,545,000	2,735,000	1,388,168,000
Grand totals	$6,182,986,000	$ 568,565,000	$ 836,341,000	$ 334,002,000	$ 30,446,000	$7,952,340,000

Municipal POST-WAR PUBLIC WORKS

post-war planning as already adopted or as proposed in cities of all sizes.

PIT AND QUARRY, acting independently of all these and other specially organized bodies, has made within recent weeks a similar study of the post-war programs of our cities, seeking to uncover the same kind of information as of a later date but within a somewhat more restricted area.

In the articles, letters and tabular data presented in the following pages all these sources have been drawn upon in an effort to present a reasonably complete and representative record of the present status of post-war construction programs in cities with populations ranging from 2,500 to more than 7,000,000 Wherever possible the data for individual cities have been given separately, and wherever it was necessary to present a composite picture the figures have been lumped for groups of cities and for types of projects. All the data presented cover the year 1944, although some of the information was collected early in the year, some of it in the summer, and some of it in the month of December. As post-war programs do not develop quickly, many months may pass without revealing any apparent progress in terms of projects approved or money appropriated, and for that reason data of a year ago may be just as important and representative as those developed more recently.

As most of the comments that follow are based on all or a majority of the sources utilized, it will neither be possible nor necessary to give the authority for each statement made. Not all the investigators used the same method, nor sought the same facts, although there was general agreement as to the nature of the information that was deemed important and of interest.

Present Status of Planning It will be disappointing to many to learn that of all the municipal post-war planning reported by various cities the great majority of it is in what may be called the "idea" and "preliminary" stages, although most of the cities reporting are doing post-war planning of some kind. The number of cities that have not yet begun their post-war planning is still large, among cities with populations under 25,000 the percentage is close to 50, while in cities over 25,000 population the percentage is approximately 15. With many of these cities planning has not progressed beyond the stage of making lists of projects thought to be desirable. Of nearly 900 cities over 10,000 population, which have made reports on their planning activities or lack of them, approximately two-thirds are doing planning in some form. Many of the country's cities have no special agency for studying or preparing post-war plans, while others have set up large and costly organizations for investigating the opportunities and need for public-works projects and for getting the plans in motion.

As is to be expected, the preponderant share of the cost of the proposed public improvement to be undertaken after the was is to be found among the largest cities. Thus, 167 cities having populations over 25,000 reported the value of their post-war improvements at $3,300,000,000. Eight large cities account for more than half of this total: New York, $1,270,000,000; Chicago, $931,833,697; Los Angeles, $406,372,929; Philadelphia, $346,713,000; Detroit, $270,000,000; Cleveland, $150,000,000; Milwaukee, $75,552,473; St. Louis, $63,385,000; Boston, $20,000,000 and Buffalo, $15,000,000.

In the class of cities with populations ranging between 25,000 and 500,000 the total capital-improvements programs for the first five years following the end of the war has been reported by 159 cities as $1,356,800,000, a yearly average of $271,364,360. As the total population of these cities is 13,262,000, the yearly average is $20,462 per 1,000 population and $1,712,354 per city.

For the 183 cities with populations between 10,000 and 25,000 the total capital-improvements programs for the first five post-war years is $156,855,000, which amounts to $31,371,000 a year. The combined population of these cities is 2,750,000, so the annual expenditure per 1,000 population is $1,140 and $171,426 per city.

Individual Programs Among the last-mentioned group of cities there are 11 which will spend $2,500,000 or more each—Morgantown (West Virginia) $5,676,000; Big Spring (Texas), Hickory (North Carolina) and Iron Mountain (Michigan) $5,000,000 each; Provo (Utah) $4,490,000; Batavia (New York) $4,000,000; Mankato (Minnesota) $3,981,000; Harrison (New Jersey) and Panama City (Florida), $3,000,000 each; Valley Stream (New York) $2,611,000; and Janesville (Wisconsin), $2,500,000. Eight other cities will spend from $2,000,000 to $2,500,000 each; 13 cities from $1,500,000 to $2,000,000 each; 16 cities from $1,000,000 to $1,500,000 each; 21 cities from $750,000 to $1,000,000 each; 39 cities from $500,000 to $750,000 each; 38 cities from $250,000 to $500,000 each; and 36 cities less than $250,000 during the first five years after the end of the war.

Of the 145 cities over 25,000 population reporting post-war program data, not fewer than 40 have prepared preliminary plans for at least one-half of the planned post-war improvements in the first five years, and more than two and one-half times as many—105 cities—have prepared designs and specifications for one-fourth of their projects. One-sixth of these 105 cities have prepared designs or specifications for more than half of their projects.

Among the cities over 100,000 population six—Cambridge (Massachusetts), Flint (Michigan), Newark (New Jersey), Richmond (Virginia) and Wichita (Kansas)—have completed designs and specifications for at least one-half of their post-war projects. In the 50,000-to-100,000 population group four have reached that stage—Charleston (South Carolina), Corpus Christi (Texas), McKeesport (Pennsylvania) and Sioux City (Iowa). In the next smaller group—25,000 to 50,000 population — 14 cities — Alexandria (Virginia), Aurora (Illinois), Colorado Springs (Colorado), Elmira (New York), Inglewood (California), Joplin (Missouri), Muskegon (Michigan), Newport (Kentucky), Newport News (Virginia), Port Arthur (Texas), Portsmouth (Ohio), San Angelo (Texas) and Sheboygan (Wisconsin) have completed their planning.

In 51 of the 154 reporting cities in the 10,000-to-25,000 population group preliminary plans for at least half of their projects have been made, only one-third have completed

their designs and specifications for a fourth of their projects, and only 27 of them have reached the stage of completeness for one-half or more of their projects.

Types of Projects New construction accounts for more than two-thirds of the principal projects to be undertaken as soon as labor and materials become available in cities of over 100,000 population. In cities of less than 25,000 population new construction accounts for only more than one-half of the proposed projects.

As the accompanying table shows, streets and highways rank high among the projects approved in all groups of cities; 98 per cent. of the cities over 100,000 population, 78 per cent. of those in the 50,000-to-100,000 group, 73 per cent. of those between 25,000 to 50,000 population, and 69 per cent. of those between 10,000 and 25,000 listed these improvements among the three most important types of projects. Holding a position of similar importance in these cities' plans are sewers, indicating the great need for better sanitation facilities, including the building of new or the improvement of existing systems and sewage-disposal plants.

Public buildings are recognized as badly needed in more than half of the cities that have reported their post-war projects. In this category of projects schools are the most popular, aside from governmental buildings (such as fire stations and city halls), 48 cities reporting plans to build one or more school buildings. Twenty-eight cities will build hospitals and nearly half of these are in the 10,000-to-25,000 population groups, showing the growing recognition of the need for greater hospitalization facilities in the smaller places.

Airports are classed by 65 cities as projects of prime importance and 10 cities over 100,000 population plan to build new ones or to improve the maintenance on existing ports.

Big-City Projects Typical of some of the important projects to be undertaken by the larger cities may be cited the plans of New York for completion of the Idlewild airport, new health centers and hospitals, huge housing developments, schools and libraries, and water supply; Philadelphia for sewage-disposal facilities, waterworks extensions, and highway construction; Los Angeles for expansion of the sewer system, and sewage-disposal plant; Detroit for low-cost housing, schools and sewer construction; Baltimore for highway, water, and sewer projects; Cincinnati for highways, sewage-disposal, bridges and waterworks extensions; Sacramento (California) for street paving, sewage-disposal plant, water and sewer extensions; Buffalo for a new bridge over the river, a garage and an incinerator; Kansas City (Missouri) for interregional highways and traffic ways, flood protection, and recreational areas; Atlanta for airport enlargement, parks and playgrounds; etc.

POST-WAR CAPITAL-IMPROVEMENT PROJECTS OF 513 CITIES OF VARIOUS SIZES

(Data from International City Managers' Association)

Type of Project	Sizes of Cities Reporting Post-War Projects			
	Over 100,000	50,000 to 100,000	25,000 to 50,000	10,000 to 25,000
Number of cities reporting	56	55	114	288
Streets and highways	98%	78%	73%	69%
Sewerage (sewers and sewage-disposal plants)	86%	87%	75%	84%
Public buildings	57%	58%	62%	47%
Water systems	30%	31%	73%	69%
Airports	18%	15%	11%	12%
Parks and playgrounds	12%	7%	11%	15%
Incinerators	11%	7%	6%	12%
Other utilities	9%	9%	5%	7%
Construction projects	70%	63%	63%	55%
Improvement projects	30%	37%	37%	45%

The Funds Available Many cities have set up reserves for post-war construction. Of 377 cities over 25,000 population that reported to the International City Managers' Association, 117 had set up post-war reserves and these funds amounted in the aggregate to $87,000,000. Gas-tax grants-in-aid will be used to finance post-war public-works programs by California, Illinois and Washington.

Broken down according to the sizes of individual reserve funds, the record shows 20 cities having post-war reserve funds amounting to $1,000,000 or more: Detroit, Los Angeles, Milwaukee, Minneapolis and Kansas City (Missouri) among the cities with populations over 500,000; Cambridge (Massachusetts), Forth Worth, Miami, San Diego, Pittsfield and Springfield (Massachusetts), Syracuse and Tulsa in the 100,000-to-500,000 group; Austin (Texas), Lansing (Michigan), Lincoln (Nebraska) and Pasadena (California) among cities in the 50,000-to-100,000 range; and Burbank (California), Rochester (Minnesota) and West Allis (Wisconsin) among cities with populations between 25,000 and 50,000.

In the 10,000-to-25,000 population group the average city's post-war reserve fund is $115,000 and the total for the 153 cities for which data are available is $16,603,000. With post-war reserves of less than $50,000 each there are 51 cities, with reserves between $50,000 and $100,000 there are 45 cities, with reserves between $100,000 and $200,000 there are 42 cities, and with reserves between $200,000 and $300,000 there are 19 cities. Only six cities have reserves that exceed $300,000.

Selected statements from responsible officials of American cities of various sizes from 50,000 population upward, outlining in different degrees of detail their post-war public-works programs, appear in these pages, and for many cities, for which such statements could not be presented because of lack of space, the facts are given in tabular form. Due to the fact that the data presented were collected by different agencies, at different times and in accordance with slightly different ideas of what information was deemed most important, the reader must not be astonished if he detects slight differences in the data.

Municipal POST-WAR PUBLIC WORKS

Bethlehem
Pennsylvania
50,490

Numerous important projects are embraced in Bethlehem's post-war public-works construction program. The 11 projects will cost $8,025,300. The list includes:

Project 1. Trunk-line sanitary sewers in six sub-projects, total cost $1,260,000.
Project 2. Sewage-treatment plant to cost $1,171,000.
Project 3. Storm sewers to cost $759,300.
Project 4. Trunk-line water mains costing $595,000.
Project 5. City administration building to cost $391,000.
Project 6. Flood relief to cost $2,000,000.
Project 7. New highways, including skyline drive, to cost $363,000.
Project 8. City park improvements to cost $200,000.
Project 9. Swimming pool and bath houses to cost $100,000.
Project 10. Fire training tower to cost $15,000.
Project 11. Fire house to cost $30,000.

ROBERT PFEIFLE
Mayor

Dec. 12, 1944

Binghamton
New York
78,309

Projects for post-war construction being considered by the city council of Birmingham include the following projects:

Vestal Ave. repaving	$ 400,000
Court St. pavement reconstruction	200,000
Court St. underpass construction	175,000
Court St. river bridge strengthening	100,000
Signal-system rehabilitation	305,000
New signal headquarters building	25,000
Sewage-disposal plant and system	2,000,000
Two pumping stations	80,000
Water St. fire-station addition	5,000
City hospital improvements	135,000
New Pearne St. fire station	42,000
Total	$3,167,000

The four projects first mentioned are expected to be taken over by the state both as to maintenance and reconstruction or replacement, under a program of arterial highway legislation, part of which has already been enacted in New York State.

The other projects are in various stages of authorization by the city council as to submission to the New York State Post-War Public Works Planning Commission for its approval and the allocation of one-half of 4 per cent. of the estimated cost of the project allowed for the preparation of plans and specifications, the other 2 per cent. being supplied by the city. A progressive chronological schedule for this construction has not been made, and the date of beginning, relative to the end of the war, is also undetermined. A breakdown of materials and man-hours is not available. These projects are not "make-work" projects, and, within obvious limitations, may be started in any event.

WALTER B. LOUNSBURY
Mayor

Dec. 8, 1944

In order to provide an informative report on the progress of post-war public-works planning on the part of American cities, the mayors of nearly two hundred of the largest municipalities were invited to present to Pit and Quarry readers brief statements regarding their programs—the nature of the projects contemplated, their estimated cost and a report on the status of their plans. The statements appearing on this and the following pages have been chosen from the replies received to present a variety of situations and the program ideas developed by various types and sizes of cities. Detailed data on these and other cities are given in tabular form to conserve space.—Directing Editor.

Boston
Massachusetts
770,816

Boston has given careful consideration to the development of a program of public works for the post-war period. Final details have not yet been effected with regard to financing, but a program has been developed which anticipates a total expenditure of just under $20,000,000 in the next six years. The tentative financial program indicates that approximately two-thirds of the money would be made available through bond issues and one-third would come directly out of the tax levy.

The projects will include financial allotments each year for certain recurring types of construction, such as new streets, reconstruction of old streets and sidewalks, traffic islands and circles, new sewer construction, the extension and relaying of water mains and reconstruction of elements of the park roadway system.

The program as now developed is aimed to serve as a guide for action in 1945 so that the budget will include adequate allowances for the preparation of the plans and specifications needed for the construction of the projects slated for the early years of the program. The city will thus be in a position to take prompt action in arranging contracts and starting work when men and materials become available at the termination of the war. It is not possible to foresee in advance just when this situation will develop, but it is necessary to take, as promptly as possible, the preliminary steps required to get prompt action when the emergency arises.

This program relates only to capital outlays supported by the city's tax levy. Important major thoroughfare improvements now being planned by the state are not a part of this program, as is also the case with proposed expenditures from the George Robert White Fund which are being separately considered.

This program will afford a working basis for authorizations in the six-year period suited to the conditions of the moment. The program is capable of being speeded up or slowed down as conditions warrant.

Major construction items in the program are as follows:

New street construction	$1,000,000
Reconstruction of old streets	4,500,000
Two refuse incinerators	2,000,000
Sidewalk construction	300,000
Traffic islands and circles	300,000
New sewer construction	600,000
Extension of water mains	360,000
Relaying water mains	450,000
Meridian Street bridge	2,000,000
Warren Avenue bridge	1,500,000
Blakemore Street bridge	50,000
Sand hoppers	80,000
Viaduct, Long Island to mainland and approaches	1,250,000
Rebuilding park roads	500,000
New playground development	550,000
Improvement to common and public garden	150,000
Marine recreation pier	125,000
Addition to trade school	190,000
Enlargement of vocational garage, Brighton High	55,000
Annex to Mechanic Arts High School	400,000
New fire station, West Roxbury	75,000
Institutional Projects:	
New garage	30,000

New women's dormitory	250,000
Utility building	150,000
New women's hospital	800,000
New men's hospital	200,000
New back wharf	75,000
Addition to warehouse	25,000
New nurses' home	400,000
Extension X-Ray building	59,500

CITY PLANNING BOARD
THOMAS E. McCORMICK
Dec. 19, 1944 *Executive Director*

Cincinnati
Ohio
455,610

At the recent November election the electorate of Hamilton County and the City of Cincinnati approved bond referenda amounting to $41,000,000 for the following type projects:

City:
- $6,000,000 for street improvements
- 3,000,000 for sewers
- 2,000,000 to eliminate grade crossings
- 2,000,000 for University of Cincinnati
- 1,000,000 for parks
- 1,000,000 for playgrounds and recreation
- 1,000,000 for general hospital

County:
- $3,500,000 for trunk sewers
- 3,500,000 for new library
- 1,000,000 for highways
- 1,000,000 for county building (Juvenile Detention Home, etc.)

Board of Education: $16,000,000 for sites and for construction and equipment of school buildings

The above $41,000,000 bond authority together with self-supporting bond issues (water works $8,000,000 and sewage disposal $17,000,000) assessments, and funds provided by others will finance a possible post-war public-works program to the extent of $65,000,000 or $70,000,000.

A tentative outline has been made of the various type post-war projects to be undertaken by the City of Cincinnati but up to the present time this program has never been promulgated by our city council, the policy-making agency for the City.

DEPARTMENT OF PUBLIC WORKS
DIVISION OF ENGINEERING
H. H. KRANZ
Dec. 19, 1944 *City Engineer*

Columbia
South Carolina
62,396

The following is a list of our post-war projects which we hope to construct: We can not estimate the amounts of materials needed.

Street construction	$1,100,000
Water-works extensions	295,000
Sewer extensions	75,000
Airport extensions	15,000
Traffic signals	35,000
Extension of water-distribution system	569,000
Additional water-treatment facilities	75,000
Fire station and equipment	125.000
Parks and playgrounds	50,000
Community buildings	50,000
Coagulating basins and pumps	348,000
Swimming pools	600,000
Storm drains	1,141,670
New police barracks	225,000
Incinerators	300,000
Total	$5,003,670

W. S. TOMLINSON
Dec. 12, 1944 *City Engineer*

Corpus Christi
Texas
57,301

The city of Corpus Christi has recently voted bonds in the amount of $1,500,000 for the construction of additional sea-wall protection. This work will probably be under construction within the near future. Among other construction being planned is an armory for the Texas Defense Guard, a new police building, a new street-department building, a municipal auditorium, a new city hall, a new city library building, a greatly enlarged water system, and both sanitary and storm sewer systems, considerable street paving, and investigations are being made looking to the construction of a new retaining dam and reservoir which is estimated will cost several million dollars. The Corpus Christi Independent School District, on November 18, voted $1,750,000 in bonds which will be used for enlargement of the school system, chiefly for new buildings. Application has been made to the proper governmental agency for authorization to construct immediately 1,000 additional homes in Corpus Christi. Also, it is contemplated that there will be much private building and construction work when materials and manpower are available.

A. C. McCAUGHAN
Dec. 8, 1944 *Mayor*

Dayton
Ohio
210,718

The city of Dayton has planned a very comprehensive program for the post-war period which includes a number of projects which have been deferred in the past twelve years due to the depression and the war.

The No. 1 project is the completion of a portion of the track-elevation program which was about 35 per cent. completed in the period between 1929 and 1932. The proposed work covers track elevation along the Baltimore & Ohio tracks from East Third Street through North Dayton and across Leo Street, in addition to the Big Four, Erie and Baltimore & Ohio tracks across East Third Street east of Keowee Street. The work in this section has been estimated to cost approximately $8,000,000.

The second project which has been set up is the construction of a new water-softening plant which is estimated to cost approximately $2,500,000. Plans for this improvement have been completed and it will be possible to proceed with actual construction within a very short time after the end of the war.

The improvement of Route 25

POST-WAR PUBLIC-WORKS PROGRAMS OF 6 CITIES WITH POPULATIONS BETWEEN 500,000 AND 1,000,000

(Data from city governments, local post-war planning bodies, Federal Works Agency, Committee for Economic Development, International City Managers' Association, National Resources Planning Board, and other sources.)

City and State	Population (1940)	Estimated Cost of Capital Improvements Planned for First 5 Post-War Years	Types of Principal Post-War Projects*	Post-War Reserve Funds Available	Estimated 1944 Expenditures for Post-War Plans (excluding land)
Boston, Mass.	770,816	$15,000,000	B,I,Str	.....	$150,000
(Metropolitan area)	2,350,514				
Buffalo, N. Y.	575,901	15,000,000	G,I	None	25,000
(Metropolitan area)	857,719				
Cleveland, O.	878,336	150,000,000	.....	.....	250,000
(Metropolitan area)	1,214,943				
Milwaukee, Wis.	587,472	75,552,473	Sch,Sew,Str	$53,304,380	.....
(Metropolitan area)	790,336				
Pittsburgh, Pa.	671,659	.....	.....	.....	90,000
(Metropolitan area)	1,994,060				
St. Louis, Mo.	816,048	63,385,000	A,H,Sew,Str	.....	50,000
(Metropolitan area)	1,367,977				

*A, airport; B, buildings other than schools; G, bridges or grade crossings; H, hospitals; I, incinerator; Sew, sewers; Str, streets.

Municipal POST-WAR PUBLIC WORKS

(Dixie Highway) through the city is proposed as the next most important improvement. Studies and plans for this project are being developed by the City Plan Board in co-operation with the State Highway Department and it is expected that at least a portion of this improvement will be ready for contract within the next year. No estimate of cost has been made available on this project up to the present time.

Several new bridges have been proposed and are very necessary on account of the traffic congestion on the existing bridges. The first bridge listed is one connecting West First Street with Salem Avenue, the second one a new bridge connecting Patterson Boulevard with Riverside Drive, then following with the reconstruction of the Main Street bridge and the Herman Avenue bridge. The work on these four bridges has been estimated to cost approximately $2,-500,000.

Major street improvements including the Marginal River Boulevards, circumferential routes and the improvement and widening of many existing streets comes next on the list at an approximate cost of $13,-000,000.

In addition to the above, many other projects are listed including the following: Administration building at the municipal airport, bridge reconstruction at Third Street and Dayton View bridges, Sewage-treatment plant improvements, water-main extensions, new municipal garage, playgrounds and recreational improvements, storm sewers, sanitary sewers, street and boulevard lighting, civic auditorium, public swimming pool, and public parking facilities.

Many other small improvements are also listed to bring the total estimated cost of post-war improvements in the city of Dayton up to a total cost of approximately $40,-000,000.

City officials and the Dayton District Development Committee are now studying this program in order to determine how much of the program the city of Dayton can afford to undertake in the years immediately following the war. Existing state laws governing the financing of improvements of this kind make it very difficult to obtain the approval of the voters on such a program. Various methods of relief are being considered but up to the present time no definite action on any changes in the present state laws have been made which would make it possible for municipalities to finance such a program as outlined above.

JOHN F. HALE
Chief Engineer

Dec. 22, 1944

Evansville
Indiana
97,062

The post-war construction projects which our community is planning are still in the formative stage and are as follows:

POST-WAR PUBLIC-WORKS PROGRAMS OF 43 CITIES WITH POPULATIONS BETWEEN 100,000 AND 500,000

(Data from city governments, local post-war planning bodies, Federal Works Agency, Committee for Economic Development, International City Managers' Association, National Resources Planning Board and other sources.)

City and State	Population (1940)	Estimated Cost of Capital Improvements Planned for First 5 Post-War Years	Types of Principal Post-War Projects (See footnotes for explanations.)	Post-War Reserve Funds Available	Estimated 1944 Expenditures for Post-War Plans (excluding land)
Atlanta, Ga.	302,288	$10,000,000	A,P,Str	$ 475,000	$ 5,000
Metropolitan area	442,294				
Birmingham, Ala.	267,583	50,000,000			7,200
Metropolitan area	407,851				
Cambridge, Mass.	110,879	3,500,000	P,Str,W	1,000,000	
Camden, N. J.	117,536				20,000
Cincinnati, O.	455,610	65,000,000	G,SewD,W	500,000	121,000
Metropolitan area	789,309				
Dallas, Tex.	294,734	10,000,000	A,Str,W	400,000	75,000
Metropolitan area	376,548				
Dayton, O.	210,718	45,000,000	G,W	None	100,000
Metropolitan area	271,513				
Des Moines, Ia.	159,819	75,000,000	B,Sch,Sew,Str		37,500
Metropolitan area	183,973				
Elizabeth, N. J.	109,912				2,000
Flint, Mich.	151,543	19,714,456	G,Sew,W	240,000	
Metropolitan area	188,554				
Fort Wayne, Ind.	118,410	8,000,000	G,Sew,Str	298,000	
Metropolitan area	134,385				
Fort Worth, Tex.	177,662	2,885,000	Sew,SewD,Str	1,000,000	
Metropolitan area	207,677				
Gary, Ind.	111,719	15,000,000	A,B,Sew		15,000
Houston, Tex.	384,514	20,000,000	A,Str,W	400,000	75,000
Metropolitan area	510,397				
Kansas City, Mo.	399,178	15,000,000	P,Str	1,500,000	44,000
Metropolitan area[1]	634,093				
Long Beach, Cal.	164,271	56,000,000	Str,Sew,A,G		
Louisville, Ky.	319,077	64,000,000	B,Sew,SewD	25,000	100,000
Metropolitan area	434,408		Sch,Str		
Memphis, Tenn.	292,942	73,951,925			10,000
Metropolitan area	332,477				
Miami, Fla.	172,172	41,163,000	A,H,Sew, SewD	1,050,000	25,000
Metropolitan area	250,537				
Newark, N. J.	429,760				25,000
New Haven, Conn.	160,605				10,000
Metropolitan area	308,228				
New Orleans, La.	494,537	130,142,000	G,Str,W		100,000
Metropolitan area	540,030				
Oakland, Cal.	302,163		B,Sew,Str		100,000
Metropolitan area[2]	1,428,525				
Oklahoma City, Okla.	204,424	10,000,000	A,SewD,Sew		10,000
Metropolitan area	221,229				
Peoria, Ill.	105,087	3,770,000	B,Sew,Str	None	12,000
Metropolitan area	162,566				
Reading, Pa.	110,568				10,000
Metropolitan area	175,355				
Richmond, Va.	193,042	13,600,000	Sew,Sch,W		12,000
Metropolitan area	245,674				
Sacramento, Cal.	105,958	15,000,000	SewD,Str,U		
Metropolitan area	158,999				
St. Paul, Minn.	287,736		B,H,Sch,SewD		
Metropolitan area[3]	911,077				
San Antonio, Tex.	253,854	20,275,000	Sew,Sch,Str		10,000
Metropolitan area	319,010				
San Diego, Cal.	203,341	610,000	B	1,861,000	10,000
Metropolitan area	256,368				
Seattle, Wash.	368,302	37,000,000	Sew,Str,W	950,000	25,000
Metropolitan area	452,639				
South Bend, Ind.	101,268	2,160,000	SewD		10,000
Metropolitan area	147,022				
Spokane, Wash.	122,001				5,000
Metropolitan area	141,370				
Springfield, Mass.	149,554	5,000,000	A,B,Sew	1,690,000	15,000
Metropolitan area[4]	394,623				
Syracuse, N. Y.	205,967	10,000,000	Sew,Str,W	1,020,000	55,000
Metropolitan area	258,352				
Tacoma, Wash.	109,408	15,500,000	G,Sew,W	37,000	
Metropolitan area	156,018				
Toledo, O.	282,349	85,000,000	G,Str		63,000
Metropolitan area	341,663				
Trenton, N. J.	124,697	4,000,000	B,Str		30,000
Metropolitan area	200,128				
Utica, N. Y.	100,518	1,506,000	Sew,Str	None	30,000
Metropolitan area	197,128				
Wichita, Kan.	114,966	1,700,000	Str	None	12,000
Metropolitan area	127,308				
Worcester, Mass.	193,694	17,000,000	Sew,Str,W	200,000	
Metropolitan area	306,194				
Yonkers, N. Y.	142,598		Str,Sew,Sch		

[1] Includes Kansas City, Kan. [2] Includes San Francisco, Cal. [3] Includes Minneapolis, Minn. [4] Includes Holyoke, Mass.

A, airport; **B**, buildings other than schools; **G**, bridges or grade crossings; **P**, parks and playgrounds; **Sch**, schools; **Sew**, Sewers; **SewD**, sewage-disposal plant; **Str**, streets; **U**, utility developments; **W**, additions to water-supply system.

POST-WAR PUBLIC WORKS - *Municipal*

Highways, roads, streets—31 projects totaling	$1,560,538
Airport enlargement	1,100,000
Sewers—Water and sanitation facilities	2,500,000
Schools	3,130,000
Public buildings	50,000
Parks and recreational facilities —27 projects	954,000
Total	$9,945,538

MANSON L. REICHERT
Dec. 11, 1944 *Mayor*

Flint
Michigan
151,543

The city of Flint has a program of post-war capital improvements aggregating upwards of $19,000,000 in cost. This program covers projects of widely diversified types and characters, the need of which is recognized and accepted.

I am listing the first ten projects which have been given priority ratings in the order named by our City Planning Commission as follows:

DESCRIPTION	MAN-HOURS	COST
Clifford Street bridge	230,000	$ 514,200
Sanitary trunk sewer (western area)	125,000	250,000
Water-plant supply (extension)	625,000	1,250,000
Airport hangars	87,800	177,880
Community house	57,500	115,000
Fifth Avenue bridge and underpass	123,200	272,800
Municipal building	476,000	961,000
Police administration building	48,896	987,795
Storm sewer system	184,200	360,850
Health Center	12,375	25,000
Water-filter plant (extension)	614,000	1,250,000
	2,583,971	$6,164,525

We have in addition to the above projects plans for sewer-plant extension, pavement resurfacing, pavement extensions, municipal building, park improvements, etc., totaling $13,549,931.

How soon the program is started is of course dependent upon means of financing. We do not however anticipate completion within ten years or more because of the magnitude of the program.

Plans for some of the smaller projects have been completed, but we are unable to make at this time an estimate of the construction materials needed. It is apparent that considerable quantities of these materials will be used.

GEORGE T. GUNDRY
Dec. 16, 1944 *City Manager*

Greensboro
North Carolina
59,319

Our post-war public improvements are not expected to be large and none have reached the blue-print stage, which makes it practically impossible to furnish es-

POST-WAR PUBLIC-WORKS PROGRAMS OF 47 CITIES WITH POPULATIONS BETWEEN 50,000 AND 100,000

(Data from city governments, local post-war planning bodies, Federal Works Agency, Committee for Economic Development, International City Managers' Association, National Resources Planning Board and other sources.)

City and State	Population (1940)	Estimated Cost of Capital Improvements Planned for First 5 Post-War Years	Types of Principal Post-War Projects (See footnotes for explanations.)	Post-War Reserve Funds Available	Estimated 1944 Expenditures for Post-War Plans (excluding land)
Allentown, Pa.	96,904	$ 300,000	B,P,Sew	$ 256,000	$10,000
Metropolitan area[1]	325,142				
Amarillo, Tex.	51,686	4,500,000	B,Sew,W	550,000	5,000
Metropolitan area	53,463				
Asheville, N. C.	51,310	.....	.....	.....	10,000
Metropolitan area	76,324				
Austin, Tex.	87,930	6,800,000	E,SewD,W	1,000,000	30,000
Metropolitan area	106,193				
Berkeley, Cal.	85,547	.....	.....	.....	4,000
Bethlehem, Pa.	50,490	8,025,300	Sew,SewD,W	50,000	25,000
Metropolitan area[2]	325,142				
Binghamton, N. Y.	78,309	3,167,000	B,G,W	None	25,000
Charleston, W. Va.	67,914	5,000,000	G,H,SewD	None	25,000
Metropolitan area	136,332				
Columbia, S. C.	62,396	5,003,670	Str,W	.....	.....
Metropolitan area	89,555				
Columbus, Ga.	53,280	1,000,000	Sch,Sew,Str	250,000	.....
Metropolitan area	92,478				
Corpus Christi, Tex.	57,301	25,000,000	A,B,Str,U	.....	5,000
Metropolitan area	70,677				
Dearborn, Mich.	63,584	221,000	SewD,Str,W	222,000	.....
Durham, N. C.	60,195	2,000,000	B,Str,U	238,000	5,000
Metropolitan area	69,683				
Evanston, Ill.	65,389	150,000	B	.....	1,000
Evansville, Ind.	97,062	9,945,000	Sew,Sch,Str	.....	None
Metropolitan area	141,614				
Fresno, Cal.	60,685	5,000,000	B	.....	1,000
Metropolitan area	97,504				
Greensboro, N. C.	59,319	750,000	B	.....	.....
Metropolitan area	73,055				
Hammond, Ind.	70,184	27,090,000	G,Sch,Str	.....	10,000
Harrisburg, Pa.	83,893	6,730,900	Str,G,SewD	.....	.....
Metropolitan area	173,367				
Holyoke, Mass.	53,750	.....	.....	.....	15,000
Metropolitan area[3]	394,623				
Jackson, Miss.	62,107	1,270,000	Sew,W	.....	.....
Metropolitan area	88,003				
Kalamazoo, Mich.	54,097	.....	.....	.....	10,000
Metropolitan area	77,213				
Lincoln, Neb.	81,984	2,743,000	B,W	1,733,000	6,000
Metropolitan area	88,191				
Macon, Ga.	57,865	1,292,000	H,P,Str,W	500,000	None
Metropolitan area	74,830				
Madison, Wis.	67,447	6,000,000	B,H,Str	.....	60,000
Metropolitan area	78,349				
McKeesport, Pa.	55,355	7,700,000	Str	125,000	5,000
Mount Vernon, N. Y.	67,362	3,177,000	B,I	500,000	None
New Britain, Conn.	68,685	2,340,000	Str,Sew,I	.....	.....
Metropolitan area	502,193				
Niagara Falls, N. Y.	78,029	4,120,000	Sew,Str,W	.....	82,000
Metropolitan area[4]	857,719				
Pasadena, Cal.	81,864	6,240,000	G,Sch,Str	3,375,000	.....
Passaic, N. J.	61,394	8,000,000	Sew,W	.....	None
Phoenix, Ariz.	65,414	5,000,000	A,Sch,W	60,000	25,000
Metropolitan area	121,828				
Pontiac, Mich.	66,626	19,697,000	B,Sch,SewD	200,000	10,000
Portland, Me.	73,643	2,715,150	Str,B,Sch	.....	.....
Metropolitan area	106,566				
Pueblo, Colo.	52,162	.....	.....	.....	5,000
Metropolitan area	62,039				
Racine, Wis.	67,195	2,200,000	Str,Sew	.....	.....
Metropolitan area[5]	135,075				
Roanoke, Va.	69,287	5,000,000	W	100,000	25,000
Metropolitan area	110,593				
Rockford, Ill.	84,637	5,000,000	G,Sch,W	81,000	500
Metropolitan area	105,259				
Saginaw, Mich.	82,794	.....	Sch,Str,W	.....	30,000
Metropolitan area	153,388				
St. Joseph, Mo.	75,711	.....	.....	.....	5,000
Metropolitan area	86,991				
St. Petersburg, Fla.	60,812	5,565,000	Str,Sew,B,P	.....	7,500
Metropolitan area	209,693				
San Jose, Cal.	68,457	4,500,000	A,SewD,Str	105,000	.....
Metropolitan area	129,367				
Schnectady, N. Y.	87,549	.....	.....	.....	20,000
Metropolitan area[6]	431,575				
Sioux City, Ia.	82,364	1,600,000	B,Str	210,000	5,000
Metropolitan area	87,791				
Topeka, Kan.	67,833	3,132,758	Str,Sew,B	.....	.....
Metropolitan area	77,749				
Waco, Tex.	55,982	2,000,000	Sew,SewD,Str	100,000	.....
Metropolitan area	71,114				
Waterbury, Conn.	99,314	2,500,000	G,SewD,Str	100,000	10,000
Metropolitan area	144,822				
Waterloo, Ia.	51,743	3,000,000	A,Sew,Str	300,000	.....
Metropolitan area	67,150				
Wheeling, W. Va.	61,099	4,625,000	B,G,Str,W	250,000	10,000
Metropolitan area	196,340				

[1]Includes Bethlehem and Easton, Pa. [2]Includes Allentown and Easton, Pa. [3]Includes Springfield, Mass. [4]Includes Buffalo. [5]Includes Kenosha, Wis. [6]Includes Troy, N. Y.

A, airport; **B**, buildings other than schools; **E**, additions to electric utility system; **G**, bridges or grade crossings; **H**, hospital; **I**, incinerator; **P**, parks and playgrounds; **Sch**, schools; **Sew**, sewers; **SewD**, sewage-disposal plant; **Str**, streets; **U**, utility developments; **W**, additions to water-supply systems.

timates. Our plans do contemplate an auditorium, the approximate cost of which is $750,000. However, only a part of the money has yet been raised, and no plans or estimates are available.

H. A. YANCEY
Dec. 11, 1944 *City Manager*

Hammond
Indiana
70,184

The following is a list of contemplated public-works post-war projects for our city which have been developed at the present time:

City street program, estimated cost $200,000 with an approximate use of 15,000 cubic yards of aggregate.

A street-widening project at a cost of approximately $100,000.

Also for the past year and a half we have employed a consultant engineer who is submitting to our local railroads a plan of relocation and elevation. The present estimated cost of this project is $18,000,000.

The School City of Hammond has completed plans for a vocational high school, estimated cost $1,800,000. It is estimated it will use between 3,000 and 4,000 cubic yards of aggregate. The actual starting date of construction will be partially dependent upon the method of financing to be determined.

Complete plans are available for a $40,000 city garage to be used for housing city equipment.

A sewer survey has been completed which shows an immediate need of approximately 10 miles of relief sewers together with added pumping stations and pumping station equipment; estimated cost $4,000,000.

Consideration is being given by the local Board of School Trustees for a long-range school program which will total approximately $2,500,000.

We are planning to have most of the city projects mentioned above ready for some immediate action at the end of the war. Our major problem will, of course, be financing, and final plans must be held in abeyance until a satisfactory method of procuring funds has been arranged.

The Hammond City Water Department has recently started the preparation of plans to construct a $450,000 addition to the city water-purification plant and, in the event proper arrangements can be made, some of this construction will be begun in 1945.

G. BERTRAM SMITH
Dec. 15, 1944 *Mayor*

Harrisburg
Pennsylvania
83,893

The city of Harrisburg has adopted a comprehensive plan for post-war public-works construction. These will provide 2,508,350 man-hours of employment and will cost $2,959,900 for labor and $3,771,000 for materials or a total cost of $6,790,900. Grouped by types of projects, this list shows the following items:

TYPE OF PROJECT	TOTAL COST
Street widening, repairs, etc.	$ 650,400
Bridges and underpasses	943,000
Sewage-treatment plant	2,000,000
Parks and recreation	312,600
Water system	64,200
Fire department	29,000
Lighting system	96,000
Sewer system	181,600
Flood control	2,300,000
Other projects	154,100
Totals	$6,730,900

R. M. ANDREWS
Dec. 13, 1944 *City Engineer*

Jackson
Mississippi
62,107

Contemplated projects on which studies have been made, but plans not perfected, include street improvements and new streets; water-main extension; police building and jail; fire stations; school buildings; crematory; water-disposal plant; develop recently acquired new 400-acre park, including driveways; Community Center Building; concrete swimming pool, etc.

Post-war projects, on which plans and specifications are complete, include:

Town Creek flood control through business districts; widening, relocation, concrete channel paving, culverts, etc.	$ 600,000
Enlarging sanitary sewer mains	120,000
New municipal warehouse and shops	150,000
Municipal water plant, raw-water intake improvements.	200,000
Extension of water-distribution system and 1,000,000-gallon water-storage tank	200,000
Total, specifications complete	$1,270,000

J. J. HALBERT
Director of Public Works
Dec. 13, 1944

Lakewood
Ohio
69,160

At the general election November 7 a general sewer bond issue was approved by the electors for the construction of an interceptor sewer and tributaries, to the extent of approximately $280,000. The plans for this improvement are completed and the only thing now to be done is to obtain easements through certain parcels of private property. The material to be used for the main sewer is segment block. For some of the tributaries no doubt brick will be used. A small amount of sand and cement will also be used.

We also have quite an extensive paving program outlined, which no doubt will go for forward if we can obtain some assistance from the federal government. These are all repaving jobs, as some of these improvements were constructed more than thirty years ago and have outlived their usefulness. These improvements would require the usual materials used for street paving.

We have also been giving consideration to an addition to our sewage-treatment plant and municipal incinerator, but to date no definite action has been taken. We also have considered the construction of a new municipal building, but funds have not as yet been provided for this project.

If we were to go forward with these improvements it would mean that a great deal of brick, cement and other like materials would be used, as frame construction for buildings of this type is practically a thing of the past.

A. I. KAUFFMAN
Dec. 21, 1944 *Mayor*

Long Beach
California
164,271

The estimated cost of our present post-war construction program covering a period of six years is over $56,000,000. Certain important projects, such as school plants, are not listed here, although plans for these are being prepared by the Board of Education.

We expect to start construction on post-war projects immediately after the cessation of hostilities, or sooner if materials and labor become available. Many of the projects are now needed, and would have been built or would now be under construction except for the emergency. Bridges, streets and highways, schools and sewage-disposal rank among the first in importance.

Because of the large influx of immigrant war workers, we are giving special attention of population estimates and trends. Owing to the fact that this community is a part of a greater metropolitan region, the Los Angeles region, population prognostications are somewhat difficult to estimate. Thus, our employment

problems and the sufficiency of our public-works programs after the war hinge materially on similar programs by the many other cities and the county in this region.

Our program of post-war public works construction projects is considered tentative and subject to additions, change and amendment from time to time.

The following list outlines the type of project and estimated cost:

PRELIMINARY POST-WAR CONSTRUCTION PROGRAM

TYPE OF PROJECT	ESTIMATED COST
Streets and highways (20 projects)	$ 6,450,000
Bridges (5 projects)	3,050,000
Sewage disposal	3,107,000
Alamitos Bay Marina	6,200,000
Airport expansion	7,100,000
Harbor terminal, wharf, piers, etc. (20 projects)	19,765,900
Water mains (4 projects)	709,500
Recreation (16 projects)	2,445,000
Fire Department (3 projects)	138,000
Street lighting	840,250
Storm drains (4 projects)	4,600,000
Gas Department (8 projects)	1,761,400
Total	$56,487,050

S. E. VICKERS
Dec. 16, 1944 *City Manager*

Madison
Wisconsin
67,447

The city of Madison two years ago prepared a 5-year program of post-war construction which calls for expenditures over that period of $6,000,000 by way of public improvements. The improvements which are scheduled to commence as soon as post-war construction is permitted consist of the following items:

An extensive street-widening and repavement program of many of the principal city streets over this 5-year period.

An addition to the Madison General Hospital, which is owned and operated by the city, estimated to cost $400,000.

Construction of a new city hall to provide needed additional space and to replace an existing structure built in 1856, the new building to cost $1,000,000.

There are, of course, many other improvements contemplated of a nature too detailed to mention in a short communication but the city has in mind spending approximately $1,000,000 per year over a 5-year period in post-war improvement projects.

F. HALSEY KRAEGE
Dec. 7, 1944 *Mayor*

Memphis
Tennessee
292,942

The city of Memphis has prepared a program of post-war public works which involves the construction of a number of major capital improvements, the total cost of which has been estimated at $73,951,925. A summary of the list of all projects shows the following types and costs:

TYPE OF PROJECT	NUMBER OF PROJECTS	TOTAL COST
Housing and slum clearance	15	$45,909,000
Grade separations	33	8,346,000
Street paving, widening, etc.	..	6,087,193
Incinerator and garage	..	120,000
Sewers, extensions, alterations, repairs	5	3,244,319
Flood wall	2	912,397
Small bridges	..	275,000
Health clinic, etc.	16	1,742,608
Schools	20	2,821,517
Parks and recreation	5	370,564
Light, gas and water systems	12	3,232,627
Docks and harbor	5	791,110
Libraries	7	99,590
Total		$73,951,925

CITY PLANNING COMMISSION
L. P. COCKRILL
Dec. 13, 1944 *Engineer-Secretary*

Milwaukee
Wisconsin
587,472

Milwaukee's Long-Term Improvement Program Technical Committee has prepared a six-year program of public improvements for the city in the total sum of $22,248,093. To meet the expenses of this program the city has a reserve of $53,304,380, and it is the only city in America able to finance its proposed program on a cash basis. It is planned to spend the sum called for by the recommended program on the basis of between $3,000,000 and $3,800,000 each year from 1944 to 1949 inclusive.

A general summary of the projects submitted shows the following:

DEPARTMENT	ESTIMATED COST OF IMPROVEMENT
Street openings and widenings	$ 3,025,548
Street construction and repairs	67,000
Bridges and public buildings	20,770,000
Grade separations	628,000
Street sanitation	405,000
Electrical service	1,295,000
Sewers	11,317,780
Garbage disposal	37,500
Municipal equipment	393,800
Schools	213,093
Fire Department	6,053,000
Police Department	214,000
Harbor developments	7,365,000
Health	400,000
Library	2,025,000
Museum	1,689,200
Lake front development	13,000,000
Playgrounds	5,055,000
Other projects	1,598,548
Total	$75,552,473

This total of $75,552,473 represents the cost of projects submitted, but the figure of $22,248,093 represents the program recommended for construction during the six years beginning with 1944.

MUNICIPAL REFERENCE LIBRARY
Dec. 14, 1944 NORMAN N. GILL

Newark
New Jersey
429,760

On July 26, 1944, the Central Planning Board of the City of Newark presented a preliminary report on a Post-war Construction Progam to the City Commission which, if adopted without undue delay, will enable the city to have contract plans and specifications ready for execution immediately after the war is over and materials and labor become available.

The program submitted by the Planning Board is a realistic one designed to stabilize property values and to arrest population decline. The opinion is expressed in this report that the projects must be largely financed locally and the extent of the program is limited so as not to affect adversely the tax rate and bonded debt. The program contemplates the issuance of general obligation bonds in the amount of $10,000,000 over a 4-year period beginning in 1946. In addition to this bond issue, it is anticipated that approximately $2,500,000 in federal and state funds will be available for highway improvements and $2,400,000 can be raised from current revenues for self-liquidating projects to be carried out by the Water Department.

Projects specifically recommended are designed to catch up on deferred maintenance and plant replacement and to provide urgently needed new improvements, such as public facilities in privately-financed redevelopment housing projects; publicly-owned (privately-operated) parking areas in the downtown district; and self-liquidating improvement projects to the water system.

The construction projects recommended to be financed by bond issue include: (1) a $1,750,000 start in providing a new city hospital; (2) the construction of an urgently needed school to cost $560,000; (3) a $2,000,000 program for the recon-

Municipal POST-WAR PUBLIC WORKS

struction of city streets; (4) an urgently needed intercepting sewer costing $1,400,000; (5) a $900,000 new incinerator; and (6) improvements to police and fire department buildings, costing approximately $450,000.

The $2,400,000 remainder of the $10,000,000 bond issue is to cover the city's cost of providing parks and playgrounds and other public facilities in redevelopment housing projects, and to finance the cost of acquiring and developing a system of publicly-owned parking lots. In addition to the bond issue projects, the sum of $2,400,000 represents the cost of certain improvements to the water system on a self-liquidating basis and $2,500,000 in funds expected from the state and federal

POST-WAR PUBLIC-WORKS PROGRAMS OF 142 CITIES WITH POPULATIONS BETWEEN 10,000 AND 50,000

(Data from International City Managers' Association and other sources. Includes only cities whose post-war plans have been fairly well defined.)

City and State	Population (1940)	Estimated Cost of Capital Improvements Planned for First 5 Post-War Years	Types of Principal Post-War Projects (See footnotes for explanations.)	Post-War Reserve Funds Available	Estimated 1944 Expenditures for Post-War Plans (excluding land)
Albany, Ga.	19,055	$ 750,000	P,Sch		$ 6,000
Albuquerque, N. M.	35,449	3,337,000			10,000
Alexandria, Va.	33,523	3,000,000	P,Sch,SewD		35,000
Alhambra, Cal.	38,935	5,751,000	B,G,Sew,Str		
Ames, Ia.	12,555	500,000	A,E,SewD	$ 200,000	3,000
Anaheim, Cal.	11,031	300,000		150,000	7,200
Andover, Mass.	11,122	300,000	B,Sch,W	150,000	7,000
Arlington, Mass.	40,013	1,000,000	Sch,Str,U	550,000	4,000
Atchison, Kan.	12,648	263,000	Sew,Str	15,000	
Attleboro, Mass.	22,071	1,000,000	Sch,Str	125,000	1,000
Batavia, N. Y.	17,267	4,000,000	G,SewD,Str	65,000	10,000
Beaver Dam, Wis.	10,356	500,000	P,Sew,Sch	250,000	
Belleville, Ill.	28,405	3,000,000	Sew,SewD,Str		5,000
Beloit, Wis.	25,365	2,250,000	B,Sch,SewD	170,000	2,400
Bend, Ore.	10,021	250,000	P,Str,W	85,000	2,000
Benton Harbor, Mich.	16,668	2,228,000	B,G,SewD	50,000	4,000
Beverly Hills, Cal.	26,823	2,250,000	Sew,Str,W		None
Big Spring, Tex.	12,604	5,000,000	Sew,Str,W	150,000	30,000
Birmingham, Mich.	11,196	96,000	Sew,Str	1,000	1,500
Boulder, Colo.	12,958	525,000	B,Str,W	166,000	
Bremerton, Wash.	15,134	750,000	Sew,Str	218,000	
Bristol, Conn.	30,167	2,500,000	B,Sew,Str		25,000
Burbank, Cal.	34,337	6,000,000	B,Sch,Sew	1,750,000	20,000
Burlingame, Cal.	15,940	600,000		None	4,000
Butler, Pa.	24,477	250,000	I,Sew,Str	35,000	None
Cape Girardeau, Mo.	19,426	300,000	B,P		500
Charlottesville, Va.	19,400	1,848,000	W	150,000	None
Clarksburg, W. Va.	30,579	500,000	B,Sew		1,000
Clearwater, Fla.	10,136		Sew,Str,U	15,000	
Clifton, N. J.	48,827	21,452,000	Sew	434,000	None
Clinton, Ia.	26,270	100,000	A,P,Sew	None	None
Colorado Springs, Colo.	36,789	900,000	G,Sew,Str	150,000	10,000
Compton, Cal.	16,198	350,000	P,Str,W	173,000	
Concord, N. H.	27,171	500,000	Sew,Str,W		None
Cortland, N. Y.	15,881	350,000	Str,W	30,000	None
Cuyahoga Falls, O.	20,546	100,000	B,Str,W		3,000
Decatur, Ga.	16,561	200,000	B,P,Sch	68,000	25,000
Dothan, Ala.	17,194	500,000	B,Sew,U	250,000	None
Dubuque, Ia.	43,892	2,000,000	SewD,Str,W	274,000	20,000
East Cleveland, O.	39,495	2,000,000	B,P,Str	200,000	8,000
East Hartford, Conn.	18,615		B,Sch,Str	80,000	1,000
El Dorado, Kan.	10,045	400,000	A,B,Str		3,000
Elmira, N. Y.	45,106	450,000	G,Sew,Str	175,000	30,000
Elwood City, Pa.	12,329	600,000	P,SewD,Str		
Elyria, O.	25,120	3,500,000	G,Sew,W	75,000	30,000
Emporia, Kan.	13,188	146,000	Str,W	119,000	None
Escanaba, Mich.	14,830	1,500,000	P,Sew,W	75,000	5,000
Eureka, Cal.	17,055	300,000	Sew,Str,W	130,000	2,000
Ferndale, Mich.	22,523	2,187,000	Sew,Str,W		
Fort Collins, Colo.	12,251	300,000	B,SewD,U		3,000
Frederick, Md.	15,802	300,000	A,W		500
Fredericksburg, Va.	10,066		B,Str,W	21,000	
Gainesville, Fla.	13,757	1,500,000	Sew,Str,U	38,000	400
Garden City, N. Y.	11,223	343,000	Sew,SewD,W	75,000	7,000
Grand Junction, Colo.	12,479	416,000	B,W	149,000	3,500
Griffin, Ga.	13,222	500,000	B,W	150,000	3,000
Grosse Pointe Park, Mich.	12,646	870,000	P,Sew,Str	70,000	
Hagerstown, Md.	32,491	400,000	G,Sew,Str	800,000	4,500
Hempstead, N. Y.	20,856	250,000	B,Str	None	2,500
Hibbing, Minn.	16,385	1,000,000	B,Sew,Str	200,000	7,000
Hickory, N. C.	13,487	5,000,000	SewD,W	None	
High Point, N. C.	39,495		E,G	277,000	
Holland, Mich.	14,616	500,000	B,P	12,000	
Ironwood, Mich.	13,369	330,000	B,Sew,Str	15,000	1,500
Ithaca, N. Y.	19,730	550,000	B,Str	250,000	5,000
Jackson, Mich.	49,656	1,368,000	Sew,Str	None	10,000
Janesville, Wis.	22,992	2,500,000	B,P,Sch,W	775,000	7,000
Kingston, N. Y.	28,589	5,000,000	G,P,Sew		20,000
Lackawanna, N. Y.	24,058	200,000	Sew,Str	150,000	5,000
La Crosse, Wis.	42,707	1,750,000	B,I,Sew,W	200,000	1,500
Lafayette, La.	19,210	1,000,000	I,Sew,Str,W	116,000	2,000
Lakeland, Fla.	22,068	460,000	B,Sew,W	190,000	5,000
Leominster, Mass.	22,226	2,000,000	Str	235,000	2,000
Lexington, N. C.	10,550	1,000,000	B,H,W	120,000	1,000
Lockport, N. Y.	24,379	1,000,000	Sew,W		15,000
Lodi, Cal.	11,079	350,000	Sew,Str	199,000	
Logan, Utah	11,868	500,000	A,E,W	138,000	
Longview, Tex.	13,758	382,000	Sew,SewD,W	132,000	
Longview, Wash.	12,385	350,000	Str,W	75,000	2,000
Lubbock, Tex.	31,853	1,250,000	B,Sew,Str,W	460,000	
Manhattan, Kan.	11,659	750,000	A,SewD		500
Mankato, Minn.	15,654	3,981,000	Sew,Str,W	60,000	5,000
Marquette, Mich.	15,928		SewD,U	95,000	1,000
Marshall, Tex.	18,410	100,000	B,SewD,W	89,000	5,000
Martinsville, Va.	10,080	750,000	B,Str	450,000	5,000
Mason City, Ia.	27,080	1,500,000	Sew,SewD,W	190,000	10,000
Massillon, O.	26,644	2,500,000	Sew,Str	20,000	None
Neenah, Wis.	10,645	500,000	G,I,Sch	95,000	
Newport News, Va.	37,067	7,049,000	B,H,Str		2,000
Metropolitan area[1]	330,396				
Northbridge, Mass.	10,242	50,000	B,Sew,Str	160,000	None
North Tonawanda, N. Y.	20,254	3,000,000	G,Sew,SewD	265,000	
Norwood, Mass.	15,383	500,000	B,Str	50,000	4,000
Painesville, O.	12,235	2,000,000	I,Sew,SewD Str	262,000	5,000
Paris, Tex.	18,678	400,000	P,SewD,W	50,000	
Phoenixville, Pa.	12,282	100,000	P,Sew,W	40,000	700
Pittsfield, Mass.	49,684	2,000,000	Sch,Str,W	964,000	25,000
Plainfield, N. J.	37,469	1,237,000	Sew,Str	55,000	
Port Arthur, Tex.	46,140	1,500,000	B,Sew,Str	283,000	
Metropolitan area[2]	138,608				
Port Huron, Mich.	32,759	3,000,000	Sew,SewD, Str,W	100,000	12,500
Portsmouth, O.	40,466	270,000	B,H		5,000
Provo, Utah	18,071	4,490,000	SewD,U,W	165,000	1,000
Redwood City, Cal.	12,453	1,500,000	SewD,Str,W	30,000	9,000
Rock Hill, S. C.	15,009	250,000	I,P,Str	220,000	1,000
Rome, N. Y.	34,214	910,000	I,P,SewD	89,000	3,000
Metropolitan area[3]	197,128				
Royal Oak, Mich.	25,087	2,750,000	B,H,Sew,Str	50,000	7,500
St. Clair Shores, Mich.	10,405	2,267,000	B,Str,W	8,000	20,000
St. Cloud, Minn.	24,173	450,000	A,B,SewD	135,000	
Salina, Kan.	21,073	1,500,000	Sew,SewD,W	200,000	5,000
Salinas, Cal.	11,586	250,000	P,Str	70,000	2,800
Salisbury, Md.	13,313	985,000	Sew,Str,W	50,000	
San Angelo, Tex.	25,802	300,000	B,Sew	115,000	1,000
Sanford, Fla.	10,217	1,525,000	Sew,Str	50,000	2,500
San Gabriel, Cal.	11,867	300,000	B,I,Str	8,000	1,000
San Mateo, Cal.	19,403	733,000	P,Sew,SewD	30,000	6,000
Sheboygan, Wis.	40,638	850,000	A,B,Sew		
South Milwaukee, Wis.	11,134	500,000	P,Sew,W	85,000	5,000
South Pasadena, Cal.	14,356	800,000	B,W	90,000	12,000
Stevens Point, Wis.	15,777	202,000	P,Sch,Sew,W	None	
Suffolk, Va.	11,343	200,000	Sew,Str		5,000
Sweetwater, Tex.	10,367	150,000	G,Str,W	35,000	1,500
Thomasville, N. C.	11,041	350,000	G,SewD,Str	35,000	1,000
Torrington, Conn.	26,988	1,000,000	B,Sew,Str	50,000	10,000
Traverse City, Mich.	14,455		E,Sew,Str		4,000
Twin Falls, Ida.	11,851	1,500,000	A,B,W	None	
Two Rivers, Wis.	10,302	583,000	U,W	100,000	1,000
Tyler, Tex.	28,279	810,000	B,Sch,W	210,000	6,000
Vancouver, Wash.	18,788	2,000,000	Sew,Str,W	120,000	10,000
Walla Walla, Wash.	18,109	1,006,000	P,Str	374,000	
Warren, O.	42,837	10,500,000	G,Sew,W		
Watertown, N. Y.	33,385	1,074,000		21,000	4,000
Waukegan, Ill.	34,241	2,500,000	A,B,Str	140,000	2,500
Wauwatosa, Wis.	27,769	2,500,000	B,Str		8,000
Waycross, Ga.	16,763	500,000	B,Sew,W	50,000	
West Hartford, Conn.	33,776	1,000,000	B,P,Str		5,000
West Palm Beach, Fla.	33,693		B,Str	83,000	500
Whittier, Cal.	16,115	750,000	H,Sew,SewD	70,000	3,000
Wilmette, Ill.	17,226	400,000	B,Str,W		1,000
Wilmington, N. C.	33,407	3,857,000	B,I,Str	100,000	6,000
Winchester, Va.	12,095	750,000	I,Sew,SewD,W	83,000	
Winnetka, Ill.	12,430	722,000	Str	225,000	1,000
Wyandotte, Mich.	30,618	2,956,000	Sch,Sew,Str	200,000	10,000
Yakima, Wash.	27,221	2,500,000	B,Sew,W	25,000	

[1] Includes Norfolk and Portsmouth, Va. [2] Includes Beaumont, Tex. [3] Includes, Utica, N. Y.

*A, airport; B, buildings other than schools; E, additions to electric utility system; G, bridges or grade crossings; H, hospital; I, incinerator; P, parks and playgrounds; Sch, schools, Sew, sewers; SewD, sewage-disposal plant; Str, streets; U, utility developments; W, additions to water-supply systems.

governments for use on street improvements that fit into the Federal Inter-Regional Highway System.

All these improvements are coordinated with the Master Plan of the city now in preparation. They are part of the Comprehensive Plan to revitalize the entire city, and represent the most urgent projects that should be started as quickly as possible. While the report recognizes the necessity of improving Newark's competitive position by continuously reducing taxes and bonded debt, it states that this reduction should not be made at so rapid a rate as to postpone the construction of the recommended improvements.

VINCENT J. MURPHY
Dec. 21, 1944 *Mayor*

New Britain
Connecticut
68,685

While plans are not complete, we have proposed $500,000 for street construction, $300,000 for sewer construction, $200,000 for wire laterals (subway), $200,000 for an incinerator, and $140,000 for other public improvements. Tentative plans involving an additional $1,000,000 appropriations are now being considered.

GEORGE A. QUIGLEY
Dec. 8, 1944 *Mayor*

Pittsburgh
Pennsylvania
671,659

On January 28, 1942 I wrote our Planning Commission upon the subject of a Public Works Reserve and on February 4, 1942 I wrote the Commission designating it as the agency to prepare the total sequential Post-War Public Work Program for the City of Pittsburgh including the necessary financial studies, and instigated a co-operative agreement between the City of Pittsburgh's Planning Commission and the County of Allegheny's Planning Commission, concerning County projects to be built within the City. In January, 1943 City Council granted additional personnel and funds to the Department of City Planning to prepare for the Post-War construction period. The council repeated this grant in 1944.

As a result, there was submitted to myself and the city council on October 30, 1944 by the Department of City Planning a document entitled *The Pittsburgh Plan—Report of November,* 1944—*Part II; Progress of Groundwork and Inventory.* Within the framework of "The Pittsburgh Plan" we are arranging our Post-War construction program.

This is a 6-year program. In each year we expect to spend between $3,000,000 and $4,000,000. Practically all these expenditures must be made to put our existing plant in good condition. Because of the depression and war years, our maintenance has run far behind and because of our present unfavorable financial condition (not much different from that of many other cities) we can only expect (as we look forward at this date) to rehabilitate our present plant. New projects, financed from city funds, as we see it now, will be practically nil.

Our Departments of Public Works and City Planning have the first year's (of the six years) program tentatively set up. It includes:

Asphalt resurfacing	$1,000,000
Sewers	1,100,000
Concrete steps (Hillside)	200,000
Water repairs	240,000
Street repaving	500,000
Building construction	300,000
Recreation	660,000
Total	$4,000,000

The set-up for five years will be ready early next year. It is intended to gauge all future public works expenditures by our developing "Pittsburgh Plan" which is based upon the following foundation.

The city is subdivided into Improvement Districts separated by "buffer" strips. Some of the "buffer" strips may be strip marks, or a main highway within a strip park. Certain strip parks may be almost entirely composed of hillsides too steep for economic development in the usual sense.

The "Improvement Districts" may be residential, commercial or industrial districts. They may need so much improvement as to necessitate total rebuilding; or need practically no improvement. In the second case, however, the district will need "buffer" strips and adequate zoning to retain the character of its complete redevelopment.

The Improvement District plans, when completed and agreed to by those having interest in them, will thus require a new Zone Map and Zone Ordinance to consummate the "Total City Plan." It will necessarily require many years to realize the full benefit of this plant, but, when completed and supplemented by zoning, the city will have a "Total City Plan," which will revitalize areas close to the heart of the city and elsewhere and so retard decentralization of population, business, and industry with marked benefits in the tax yield to the city.

CORNELIUS D. SCULLY
Dec. 22, 1944 *Mayor*

Portland
Maine
73,643

The City Planning Board of Portland has developed a six-year post-war public-works program, made up from work projects submitted by the several city departments. The projects have been arranged in the order of the priority submitted, and consideration has been given to the city's financial ability to carry on a program as well as to the readiness of the detailed plans for construction. Projects have been listed by years, the dollar-volume annual total being within the city's estimated annual ability to pay. The cost of the program amounts to an average of $480,000 per year. A large list of "Additional Projects" has been made from which to draw additional work if a greater financial ability is developed or becomes available.

The Six-Year Program breaks down as follows:

Street railroad-track removal	$ 191,250
Pavements	162,200
3 Administration buildings	115,000
1 Recreation building (conversion)	12,000
2 Cemetery buildings	73,000
1 Fire station, ½ cost	40,500
6 School buildings	1,060,000
9 Playgrounds	241,000
Sewers	820,000
Total	$2,715,150

Pavements consist of 13,500 square yards of hard park footwalks and 54,600 square yards of park roadways, and the sewer program amounts to 19,300 feet of vitrified pipe and brick masonry sewers, 7,500 feet of reinforced-concrete sewers and 950 feet of timber outfall construction.

A land-acquisition program accounts for the remainder of the cost of the total 6-year schedule of $2,886,500.

A. EDWIN SMITH
Dec. 13, 1944 *Acting City Manager*

Portland
Oregon
305,394

The city of Portland has not prepared a complete report on its post-war plans but a progress report prepared at the re-

quest of the Special Committee on Post-War Economic Planning of the House of Representatives has been released. This program calls for an expenditure of $13,650,000 for sewers, water and sanitation strips; $4,700,000 for schools; $400,000 for parks and other recreational facilities; and $3,000,000 for miscellaneous public facilities. The first two classes of projects mentioned are in the design stage of plan preparation and the last two groups are in the preliminary stage of plan preparation. Still in the idea stage of plan preparation are highways, roads and streets to cost $625,000; bridges, viaducts and grade separations to cost $1,350,000; sewers, water and sanitation facilities to cost $157,000; parks and other recreational facilities to cost $789,200; and miscellaneous facilities to cost $2,250,000. Thus the design-stage projects total $18,350,000; the preliminary stage projects, $3,400,000; and the idea-stage projects, $5,171,200; a grand total of $26,921,200.

BEN S. MORROW
Dec. 14, 1944 *City Engineer*

Racine
Wisconsin
67-195

We have not developed our program to the extent that we can issue a statement enumerating the names, types and individual costs of construction projects planned for after the war, but we have a post-war development board on which there are representatives of industry, business, the professions and labor in the city of Racine working jointly on a program. Our program will be largely a comprehensive through- street program for the city of Racine, together with the underground work necessary, such as sewer and water mains. There will also be some addition to our sewage-disposal plant, some small buildings at our zoo and possibly a new public library.

Our street program and sewer work should run well over $1,500,000, and I believe the plan will come out on a 4- or 5-year program. The buildings should also be constructed as soon as labor and materials are plentiful and easy to obtain. These would run somewhat in the neighborhood of $700,000. There will also be some waterfront and park development, the cost of which I would not be able to estimate.

FRANCIS H. WENDT
Dec. 8, 1944 *Mayor*

St. Louis
Missouri
816,048

In general, our plan includes some 170 projects estimated to cost in excess of $63,000,000. Recently the voters approved a bond issue of $43,000,000 which, together with funds already on hand, provides for complete financing of the entire program. Plans and specifications for projects totaling approximately $5,000,000 are complete and on the shelf, and bids could be taken after a very short advertising period in the event that restrictions are lifted from materials.

I am giving you in the table below a summary which groups the projects in eleven types of construction, and indicates the total funds necessary and the sources of those funds.

With respect to the length of construction program, I might say that we have adopted a definite policy of not preparing any such program. On the other hand, we expect to complete detailed plans and specifications on all projects as rapidly as possible so that jobs may be fed into the market in such a way that economic conditions and the labor market will be sustained in the event of a post-war depression. To this end we have determined to engage a large number of architectural and engineering firms to prepare plans and specifications as rapidly as may be possible, even though we have at this time no certain knowledge when bids will actually be taken. To date some 24 such private firms have been approved by our Citizens' Committee, and more than $9,000,000 worth of work has been assigned to them. Other firms will be selected within the next few weeks and we firmly anticipate that within six months a large part of our program will be in the blue-print stage.

BOARD OF PUBLIC SERVICE
MILTON M. KINSEY
Dec. 18, 1944 *President*

Saint Paul
Minnesota
287,736

I am listing herewith the projects which we are planning for post-war work. Estimates of the costs are not available.

- 23 Playground and recreation buildings
- 6 Playground buildings to be remodelled
- Shop and garage at Como Park
- Dunning Field shelter house
- 122 Hard-surfaced tennis courts to replace existing clay courts
- 50 Hard-surfaced tennis courts in new locations
- Comfort stations at Highland, Como, and Phalen Parks
- 2 Swimming pools and bath houses
- 1 Indoor hockey rink
- County jail and alterations to court house and city hall
- 1 New sewage-disposal plant
- 1 New city workhouse
- 1 Apparatus repair and supply shop
- 1 New fire station
- 1 Venereal disease hospital
- 1 New building to house Bureau of Testing Laboratories, Bureau of Street Lighting, and emergency crew of Water Department
- 1 Shop storage and supply building
- 1 Stadium at Harding High School
- Additions to 2 schools
- 3 New grade-school buildings
- 2 Branch libraries
- 1 New vocational school and equipment
- 1 High school

CHARLES A. BASSFORD
Dec. 8, 1944 *City Architect*

PROPOSED POST-WAR PROGRAM FOR ST. LOUIS

ITEM	TOTAL COST	EXISTING BOND FUNDS	OTHER FUNDS	NEW FUNDS
Streets	$ 8,600,000	$ 780,000	.....	$ 7,820,000
Bridges and viaducts	2,285,000	222,000	$ 285,000	1,778,000
Airport facilities	14,000,000	4,103,000	.....	9,897,000
Hospitals and institutions	3,350,000	2,400,000	.....	950,000
Sewers	8,000,000	43,000	.....	7,957,000
Art museum	250,000	.....	.....	250,000
Fire protection	800,000	.....	.....	800,000
Fire and police telegraph and telephone	2,200,000	.....	.....	2,200,000
Parks and recreation	4,150,000	535,000	.....	3,625,000
Zoological park	750,000	.....	.....	750,000
Water system	19,000,000	.....	11,500,000	7,500,000
Totals	$63,385,000	$8,073,000	$11,785,000	$43,527,000

POST-WAR PUBLIC WORKS - *Municipal*

St. Petersburg
Florida
60,812

The programming of our post-war construction has not progressed to a stage that will enable me to supply detailed information. We intend so to schedule projects that work on those which require the minimum of material and the maximum of labor may be started within a month after hostilities end. Our program is being designed to extend over a 5-year period from the time construction starts.

The following are the projects listed to date. Some of the plans are now being prepared. Plans of others will be started as soon as possible.

Concrete pier, Boca Ciega Bay.	$ 40,000
Street and bridge improvements	1,000,000
Concrete grandstand	100,000
Sewers and treatment	2,500,000
Negro hospital	150,000
Police headquarters	150,000
Spa improvements	150,000
Gas-plant extensions and improvements	250,000
Water-plant extensions and improvements	500,000
Facilities at Lake Maggiore Park	125,000
Library improvements	100,000
Incinerator improvements	150,000
Auditorium	250,000
Street-lighting improvements	100,000
Total	$5,565,000

ALEX SPEER
Dec. 12, 1944 *Executive Director*

San Antonio
Texas
253,854

We are now in the process of making engineering and architectural studies with respect to specific projects and until those studies have been completed we can not determine the costs for the individual projects nor the allocation of available funds among the projects.

There are listed below various projects which have been recommended to the Planning Board for study together with the estimated funds required for each project. These estimates of costs are the broadest kind of estimates, because none of them have yet been confirmed by the necessary preliminary technical studies.

Highways (construction within the city to be financed from state and federal funds)	$ 8,000,000
Sanitary sewers, collection and disposal	3,000,000
Drainage and storm sewers	3,000,000
Airport administration building and runway extension	1,000,000
Garbage disposal	500,000
Fire and police department-buildings and equipment	750,000
Coliseum	1,000,000
River beautification	150,000
Parks and swimming pools	500,000
Junior College buildings	950,000
Library expansion	425,000
Public market	1,000,000
Total	$20,275,000

PLANNING BOARD
E. A. BAUGH
Dec. 14, 1944 *Secretary*

Seattle
Washington
368,302

For the past year a special committee has been formulating a post-war program for the City of Seattle. This program contemplates the expenditure of approximately $37,000,000 in the 5-year period following the end of the war. It represents improvements that had to be previously deferred because of stringest financial conditions and anticipated improvements that will be needed in the 5-year period after the war. Complete financial arrangements have not as yet been worked out to finance this entire program, but it is anticipated that a definite financial recommendation can be made in the early part of the coming year.

The City of Seattle's program is not a "make-work" program in the sense that we are recommending improvements that are not needed in order to create jobs. Rather, it is composed of the essential improvements needed to bring us up to date, the accomplishment of which will provide for considerable employment.

A summary of the features of the program involving the use of cement, lime, gypsum, crushed stone, sand, gravel, etc., of the types specified in your request, is as follows:

	Estimated Cost
Fire Department:	
Construct 10 new fire stations	$ 450,000
Remodel 7 fire stations	52,500
Health Department:	
Construct 2 public health nurses' district headquarters	31,000
Library Department:	
Enlargements and remodeling of the central library building	1,425,000
Construct 5 new branch library buildings	400,000
Light Department:	
Garage and warehouse facilities	275,000
Park Department:	
Park improvements	1,091,000
Boulevard improvements	401,000
Playground improvements	1,169,000
Bathing-beach improvements	126,000
Golf-course improvements	205,000
Zoo improvements	175,000
Police Department:	
Police substation	45,000
Public Safety Building:	
New building to house the Police Department, Health Department, Police Court and Traffic Court	2,500,000
Sewers:	
Trunk sewers	2,046,000
Extending sewer outfalls	241,000
Rebuilding inadequate sewers	2,007,000
Streets:	
Paving and repaving	1,950,000
Viaducts and bridges	7,331,000
Street extensions	1,019,000
Maintenance plant improvements	763,000
Bridge maintenance and betterments	385,000
Slab bulkheads and stairways	128,000
Rehabilitation of park boulevards	160,000
Water Department:	
Construct two reservoirs	800,000

POST-WAR PUBLIC WORKS AND IMPROVEMENTS ADVISORY COMMITTEE
HENRY R. BERG
Dec. 12, 1944 *Executive Secretary*

Topeka
Kansas
67,833

Topeka has long recognized the need for practical post-war planning and has adopted a program which will provide 1,526,917 man-hours of direct employment and will cost more than $3,000,000. A group listing of the project follows:

Projects	Cost	Man-Hours of Employment
30 Street projects—widening, paving, surfacing	$ 866,039	354,437
3 Bridges and 1 viaduct projects	470,000	243,700
22 Sewer and disposal-plant projects	512,355	429,785
10 Park buildings, roads and other projects	156,260	84,000
4 Water-main & related projects.	305,000	109,000
5 Building projects — library, armory, hangar, airport administration and firemen's training tower	823,104	306,000
Total	$3,132,758	1,526,917

FRANK J. WARREN
Dec. 12, 1944 *Mayor*

(*Continued on page* 95)

Chicago Plan Commission To Integrate 325 Projects By a Master 10-Year Building Plan

By observing three public-serving objectives as criteria for project selection, the plan of this city for its future welfare is in harmony with other proposed public works and attains an integral part in the Master Plan once a mere dream in the mind of Daniel Burnham, famous architect.

By
H. EVERT KINCAID
Executive Director
Chicago Plan Commission

another P.A. AND Q. exclusive

THE city of Chicago, in collaboration with the various governmental agencies having jurisdiction over certain public functions, has prepared a compilation of essentially needed public improvements for construction and development during the first 10-year period following the end of the war.

The assembly of over 325 projects was handled by the Chicago Plan Commission, as the co-ordinating agency, at the request of Mayor Edward J. Kelly, who asked that a program be formulated which could be integrated with the commission's comprehensive master plan, for the consideration of the city council and the other local administrating bodies, and for the information of the general public.

• Traffic distributor for proposed Congress Expressway making connections with a two-level Wacker Drive along the Chicago River and to Franklin Street. The expressway as illustrated passes through a center opening of the U. S. Postoffice building provided for at the time the postoffice was constructed.

Planning Objectives The Plan Commission, with the co-operation of the officers of the various agencies and city departments, observed three objectives as criteria for projects selection in formulating the suggested war-works program:

1. Each proposed improvement must serve a purpose essential to the future welfare and development of Chicago.
2. Each project shall be in harmony with other proposed public works.
3. Each proposal shall be an integrated part of the master plan of Chicago.

Thus, the object of this planning function was not an arbitrary selection of public works, but rather an attempt to effect a program of improvements that will provide for a balanced growth throughout the city in the best interests of both public and private enterprise.

The recommendations of the report do not purport to determine the priority of project need or to establish sources of funds for the acquisition of lands and construction of the individual projects. Neither does the program commit any of the administrating agencies to the building of the proposed improvements unless the projects are properly authorized and funds made available through appropriate actions. Also, the program is not intended to be a final and conclusive recommendation for post-war public improvements nor does it suggest that all projects must be realized. It is believed that long-range plans for the future development of Chicago must be somewhat flexible, in order that from time to time adjustments and additions can be made as the future unfolds. Each new project or amended plan should, however, be conceived and designed as an integrated part of the city's master plan program. Thus the development and redevelopment of Chicago will be orderly and progressive.

Financing Many of the proposed public-works projects made a part of Chicago's program can be financed in whole or in part from revenues received from the use of the improvements. This might be called the "user" type of financing and places no additional tax burdens on real estate and other taxable properties. Within this category are included motor-fuel tax, tolls, water revenues, fees, leases, concessions, and fares. Other projects of city-wide importance and from which no direct revenues are derived must necessarily be financed through grants, loans, or special appropriations from the various levels of government to the extent that such subdivisions of government benefit in the use of the project.

Employment While the main purpose of the public-works program is to enhance permanently the living qualities of Chicago, the value of such a program in determining useful work for many who might otherwise be unemployed during the post-war transition period must not be overlookedd. Major employment of Chicago workers and returning service men and women must obviously be provided by private commerce and industry. Many of the larger public projects will provide a cushion for employment dur-

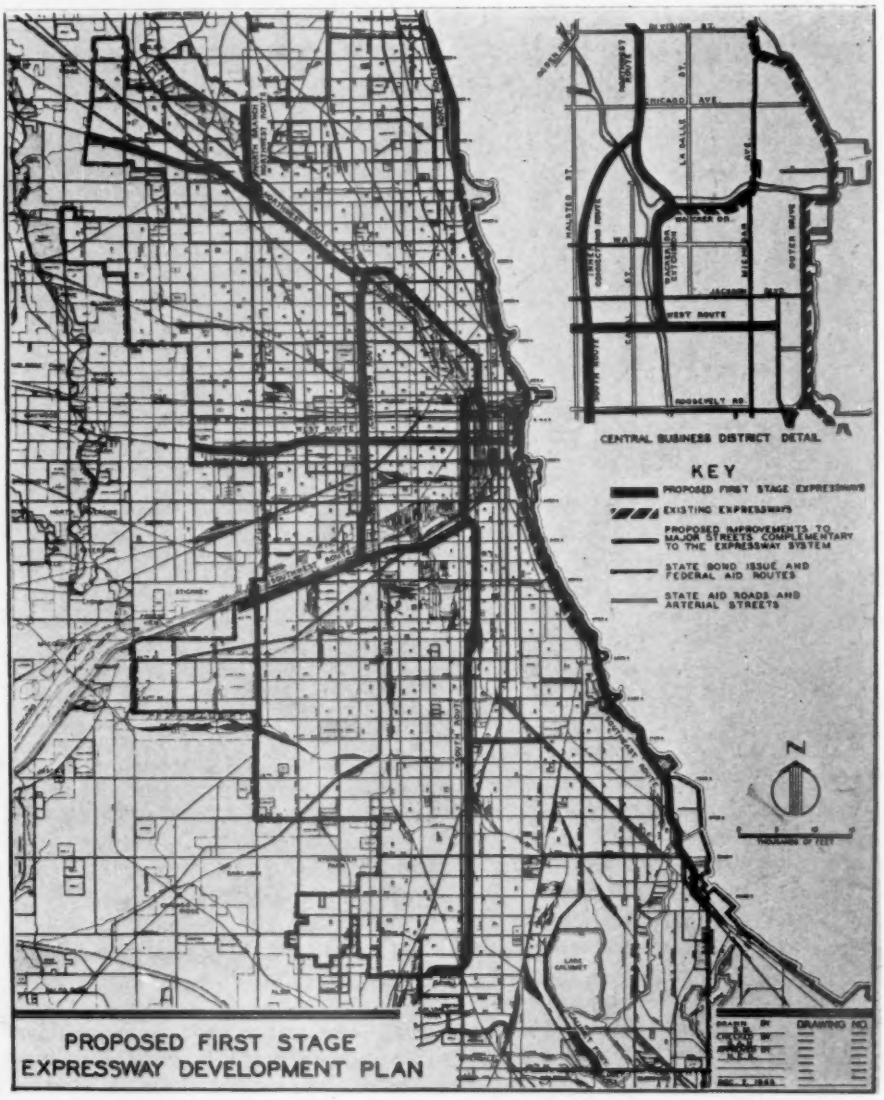
ing the forthcoming period of peacetime economic adjustment, but public construction in itself can not be depended upon to prevent widespread unemployment, and the program as formulated for Chicago is not intended for such a purpose as its main objective. The real objective is for effectuating improvements which are needed to develop a prosperous and desirable urban economic and social structure.

"Blueprints" Needed Before any public-works program can be undertaken it is obvious that detailed plans and specifications must be prepared. That in itself is a large and time-consuming task. Some of the "blueprints" are ready now. Other projects, however, are in the preliminary planning stage only and on that account the plan commission has called particular attention to providing adequate funds at the earliest possible date in order that architects, engineers, and others needed in the preparation of plans and specifications can be put to work at the earliest possible date.

Land acquisition of sites for extended public improvements is equally important in the timing and staging of the program. It has been urged that the various administrative bodies make efforts to secure funds now for the purchase of right-of-way for such projects as expressways, subway extensions, parks, schools, and other improvements affecting wide areas of the city.

Legislation Recommendations have further indicated that the enactment of certain additional legislation will also be needed to accomplish the full objective of the proposed public-works program. For example: a more functional and more attractive type of improvement could be accomplished in various instances if the city had the right of excess condemnation of land and the authority to resell portions of the unused acquired properties after the public improvements were completed. This type of legislation would be particularly effective in the development of expressways and major thoroughfares.

The redevelopment of blighted properties also involves new legislation or amendments to existing laws to aid in the assembly of decayed and obsolete properties in the blighted and slum areas. This is an important public function with the objective of rebuilding the old parts of the city into new attractive, livable, residential neighborhoods in order to again make efficient use of the land and all the public services that are available to the areas.


CENTRAL BUSINESS DISTRICT DETAIL
KEY
PROPOSED FIRST STAGE EXPRESSWAYS
EXISTING EXPRESSWAYS
PROPOSED IMPROVEMENTS TO MAJOR STREETS COMPLEMENTARY TO THE EXPRESSWAY SYSTEM
STATE BOND ISSUE AND FEDERAL AID ROUTES
STATE AID ROADS AND ARTERIAL STREETS
N
PROPOSED FIRST STAGE EXPRESSWAY DEVELOPMENT PLAN

Housing projects, in so far as the actual construction of buildings is concerned, are not made a part of the public-works program for obviously the family home is for private use no matter whether the buildings are erected by private enterprise or through public appropriations. The entire public-improvement program, however, was based on the necessity of serving the people and creating better neighborhoods in which they may live. These services include extensive improvements to public health and sanitation facilities, fire protection and police protection, all of which are vitally important to the health and safety of this large urban population.

Schools and Libraries Chicago at the present time has a very good water system and now treats all the sewage waste within the city. However, additional improvements which will perfect the sewage-treatment system and provide a filtered-water supply for all the Chicago area are contemplated.

The program further provides for extensive development of new schools in neighborhoods which have grown up during the war years and the replacement of old structures in neighborhoods which are stable in character and desirable as permanent living areas. In all 66 new elementary schools, replacements, or additions, and 27 new high schools, special schools and additions are proposed for construction.

The Public Library Board has recommended the building of 11 new branch libraries located in those parts of the city which are not now near to existing facilities.

Transportation The bulk of the public-works program, however, is made up of improvements to transportation facilities of different kinds. It is estimated that $130,000,000 is needed to modernize Chicago's transit system in order to serve every part of the city with an efficient system of public transportation comprised of subways, elevated, street-car, and bus facilities. Chicago's subway system, now in its first stage of operation, is proposed for extensions and development into the west sections of the city with the completion of the Milwaukee-Dearborn subway as the first step. With the completion of that stage of subway improvement, the Lake Street and Wabash Avenue sections of the elevated structure can be removed from around the "Loop" in the central business district. This will provide an incentive for the rehabilitation and redevelopment of those sections of the business district.

Streets Eight large expressway projects, estimated to cost over $160,000,000, are proposed to provide limited-access 8-lane improvements radiating from the central business district and connecting with the federal, state, and regional system at the corporate limits. Many miles of major thoroughfare improvements are listed to provide for more efficient traffic circulation throughout the various communities within the city. Obviously, grade separations and the construction of new bridges and viaducts accompany this program of street improvements.

Street lighting and traffic control are also a major supplementary phase of traffic safety which is essential to the people and the economy of the city. Chicago has recently authorized the issuance of $3,000,000 in bonds for initial improvements to the street-lighting system.

Aviation and Recreation The planners have not overlooked Chicago's opportunities in the field of aviation. At the present time detailed plans are underway for the development of a large new passenger terminal building at the Municipal Airport and careful study is being given to Chicago's future needs for additional airports to serve both commercial and private flying.

The recreation needs of the people are provided for in Chicago's plans for its future. Over 100 new playgrounds are proposed and about 45 community buildings, to serve residential areas which are now deficient in such opportunities. It is believed that new parks and playgrounds with adequate recreation facilities within them will do much toward stabilizing the value and desirability of residential properties within Chicago's many neighborhoods.

In summary, it may be said that while the program is huge and funds for its accomplishments are not entirely in sight, yet each project is believed practical and it is thought will create an additional asset for the people in the way of facilities needed in the efficient operation of their city.

SUMMARY OF PROJECTS

PROJECT CLASSIFICATION	ESTIMATED TOTAL COST
Public health facilities	$ 9,809,401
Sanitation and water facilities:	
Water purification	57,000,000
Extensions and betterments to water works	77,730,000
Sanitary and storm water system	101,225,514
Sewage treatment and disposal	10,204,000
Total for all sanitation and water facilities	$246,159,514
Fire protection	5,166,831
Police facilities	2,077,532
Municipal buildings	9,205,000
Parks and playgrounds	77,111,000
Boulevards and parkways	18,285,500
Schools	30,202,000
Public libraries	2,547,750
Rapid transit	175,200,000
Expressways and thoroughfares	184,176,000
Alleys and secondary streets	25,450,000
Parking	30,000,000
Street lighting and traffic control	11,277,000
Bridges	16,495,000
Grade separation and underpasses	53,546,000
Waterway improvements	9,124,000
Airports	26,000,000
Grand Total	$931,833,697

Selected Cities *(from page 92)*

Yonkers
New York
142,598

A list of projects which the city proposes to construct under the supervision of the Bureau of Engineering on the termination of the war or as soon thereafter as possible includes:

24 Projects for street improvements, such as repaving existing streets, grading and widening of existing streets and the construction of one new highway.

25 Projects for sewer improvements, such as the extension of existing sewers, the reconstruction of existing sewers and the construction of relief sewers.

1 Project for repairs to the city pier.

1 Project for the construction of new units or additions to the existing municipal incinerator plant.

1 Project for the improvement of a portion of the city's waterfront by the construction of permanent and temporary bulkheads.

In addition to the above projects the city purposes to construct a stadium seating 5,000 persons in Glen Park at an estimated cost of $150,000 and to improve park and recreation facilities at an estimated cost of $28,500.

The City's Board of Education also proposes 34 projects for altering and renovating existing school buildings at an estimated cost of $1,579,000 and the possible construction of new senior and junior high schools.

The Bureau of Water has 19 projects in varying stages of plan preparation for water-main extensions at an estimated cost of $225,000.

The Bureau of Fire, Department of Public Safety has a project for the extension and improvement of the fire-alarm system throughout the city at an estimated cost of $300,000.

The above program covers a period of 6 years and work could be started immediately on the termination of the war.

NORMAN P. HENDERSON
Dec. 16, 1944. *City Engineer*

Absenteeism is affecting production at the lime quarries, kilns, hydrating and bagging plants in the St. John, N. B., zone. Kilns that must be watched carefully the full 24 hours are left without anybody. The absenteeism prevails not only among men and youths who are newcomers to a firm, but to experienced and old hands. All of the lime firms have found it impossible to meet anywhere near the demand for the line either in barrels or bags, even by asking customers to bring their own containers and fill them.

The Detroit of Tomorrow to Become Reality By a Multimillion-Dollar Building Program

• Sites for the construction of permanent housing communities such as shown here have been acquired in two city areas. Hundreds of run-down, insanitary dwellings will be replaced by modern structures in clean, airy environment. The two projects, totaling $15,250,000, will provide 2,200 family units.

Expanding city needs of Detroit give the needed impetus to a dream, costing $270,000,000, for catching up on public construction which was postponed during the depression and the war.

By JACK SCHER

DETROIT, capital of the world's automobile industry, will enter the post-war period as one of the most highly industrialized areas in America, with a phenomenal population growth in the last two decades. The city itself has spread out like a drop of ink on a piece of blotting paper, increasing from 993,000 persons in 1920 to a present population of almost 2,000,000.

The growth of the Motor City, like that of many another, has been largely unplanned, resulting in heterogeneous neighborhoods, blighted areas, inadequate transportation, and substandard housing. The depression and the following war period saw almost no building construction to rectify these conditions.

Two years ago Mayor Edward J. Jeffries, Jr., and his Post-War Improvement Committee began working on a master plan to eliminate riot- and crime-breeding slums, beautify the city, and create new expressways, recreation centers and parks.

"The time for idle dreaming is past," the committee wrote in its final report. "We want play areas and schools conveniently located near our homes. We want decent homes in clean, airy surroundings to replace our slums. We want health centers, libraries, recreation centers, safe streets, express highways. We want a dignified, unified Civic Center, which will not only symbolize our pride in our city, but which, even more importantly, will bring together at one central accessible point the now scattered municipal departments and offices."

As a result of this attitude, Detroit now has a shelf of projects ready, representing an estimated building cost of $270,000,000, to begin the moment hostilities cease.

Both long-range and short-range in scope, the projects will give useful and profitable employment during the reconversion period, while at the same time the city catches up with its long-postponed public-works program. The Motor City is particularly conscious of the post-war employment problem. More than 160,000 men and women have entered the armed services. In addition, 375,000 workers have come into Detroit for war jobs. Some will leave after the war, but most will remain. The planning committee estimated that 200,000 more workers will be living in Detroit after the war than were normally employed there in 1940.

The working drawings and specifications were prepared by the city engineer's office under a grant of $1,300,000 from the Detroit Common Council, and additional plans were submitted by the board of education, the housing commission, the water board, and other city departments. Detroit now has down on paper a comprehensive plan for a living and dynamic new megalopolis which is ready to take shape.

Considered of first importance is the construction of a new Civic Center, at an estimated cost of $25,000,000. The site, on the Detroit River at the foot of Woodward Street, already has been approved by the Common Council. The Center will be a group of modern, harmoniously planned buildings which will quarter all the city's administrative offices, now scattered throughout more than 25 separate buildings, many located at great distances from each other.

Turning to the problem of transportation, the committee laid out detailed plans for a system of express highways, wider and straighter streets, and the elimination of traffic bottlenecks. As the center for the automobile industry, Detroiters are very traffic-conscious, driving on the average 20 miles a day to and from work. Thus, increased safety, the speed of cross-town traffic, and ready accessibility to the downtown area and the new Civic Center of outlying districts, are highly important.

Municipal POST-WAR PUBLIC WORKS

One new superhighway is contemplated for the immediate post-war period. To be called the John C. Lodge Expressway, it will serve the north and northwestern parts of the city, connecting with the new Harper-McGraw Expressway and the existing section of the Davison Expressway. It will embody the latest in underpasses, traffic controls and other modern devices.

The Expressway will be 11 miles long, the width of the paved roadways providing for three 12-foot traffic lanes in each direction, separated by a central median. An extra lane will be built on each side for traffic entering or leaving the highway without interfering with the through high-speed traffic.

Three types of construction will be used—elevated, depressed, and at even grade. Where the Expressway is to be elevated, it will be on structure rather than fill-in, and the ground surface will be preserved for other uses, such as the maintenance of cross-streets, many of which otherwise would be closed, and parking facilities and playgrounds for which the overhead structure will act as shelter.

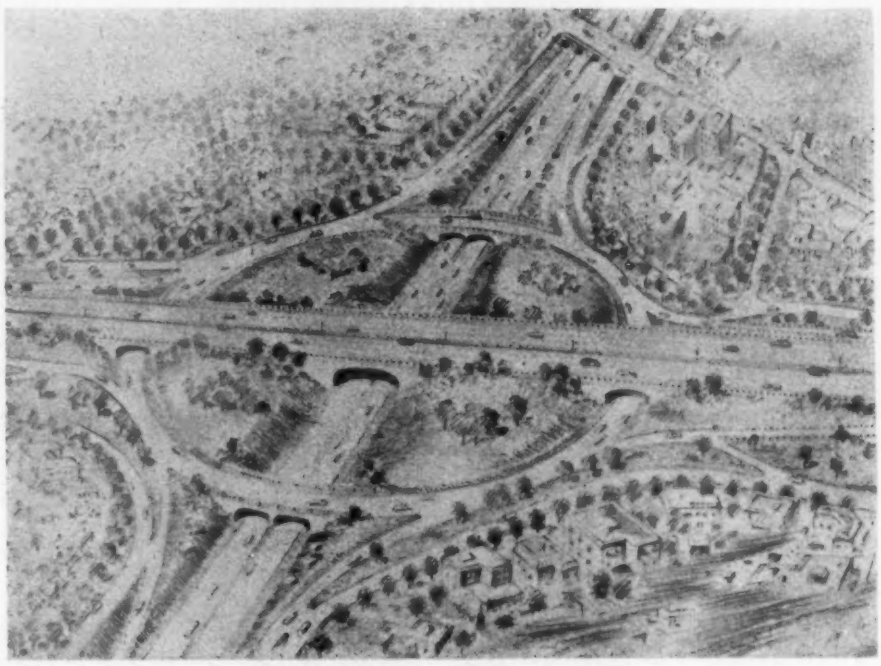
The greater length of the route will be depressed in a right-of-way of 300 feet, with park-like treatment along the sides, and overhead bridges for cross streets.

A radical innovation in road-building will be applied in the downtown section, where a double structure will be erected, with each deck carrying traffic in only one direction. This double-deck highway will be used because it necessitates only the minimum of right-of-way, while at the same time affording safe and frequent turns to either the right or the left.

The expected peak-hour capacity of the Expressway is 4,500 cars an hour, cutting through traffic time to the northern sections of the city by at least half an hour, and completely avoiding present bottlenecks.

In addition to the Expressway, the city will undertake, at a cost of $15,000,000, a comprehensive program for resurfacing, widening, and straightening streets and alleys. Special attention will be given through-traffic streets and other thoroughfares expected to bear increased traffic burdens in the future. Another part of the transportation program is the construction of grade crossings, at an outlay of $8,500,000, to eliminate dangerous crossings, and cut down accidents and delays.

Detroit also intends to keep abreast of the new era of air transportation. Because its present airport long has been considered outmoded, a new airport is being planned at a cost of $6,650,000 exclusive of land costs. Situated at Eight Mile and Ryan Roads, it will include a large new terminal building and all the other facilities of a first-class airport.



• The John C. Lodge Expressway, an important link in a whole network of such freeways, will serve the northern and northwestern parts of the city, bringing that area within a few minutes from downtown Detroit.

The building program also calls for a vast increase in the city's educational facilities. Wayne University is to be materially expanded, with a completely new campus in a three blocks area on the west side of Cass Avenue north of Warren Avenue. The first structure to be erected will be a $1,000,000 student building.

City library facilities will be expanded at a cost of $1,800,000. This will include the building of a new wing to the Main Library, and the erection or expansion of six branch libraries.

Because there has been no appreciable school construction since the early 1930's, the board of education has developed a $45,000,000 program. This includes 11 new elementary schools, additions to 33 existing schools, an addition to one intermediate school, one new high school and additions to four existing high schools, a new group consisting of elementary, intermediate and high schools, a vocational school for aero-mechanics, and a $400,000 warehouse.

The people of Detroit — one-fourth of whom work in industries— have become acutely aware of the need for medical facilities, particularly for the treatment of industrial accidents and diseases. As a result, the Common Council already has allocated half a million dollars for the acquisition of the site for the new Wayne University Medical Center, consisting of 55 acres, and located at Warren, Brush, Ferry, and Hastings streets. The initial structures alone will cost $20,600,000. This sum includes $6,000,000 for a new University Hospital, with facilities to serve both in-patients and out-patients.

Vast improvements in play facilities also are contemplated because of the relation between recreation and health. Sixteen parks and playgrounds will be built at a cost of $6,000,000, five health centers costing $340,000, 18 new recreation centers, a canoe and skating pavilion,

zoo exhibits, refectories, improvements at the Brighton summer camp, eight reinforced-concrete swimming pools costing $1,840,000 which will measure 75 feet by 165 feet each and will have locker rooms and showers, and two stadia, one on the east side and the other on the west side of the city, each seating between 20,000 and 30,000 persons.

View of the Civic Center on the Detroit river. This group of modern, harmoniously planned civic buildings costing $25,000,000, was designed to provide efficient quarters for the city's administrative departments.

The public housing program, which in the late 1930's only began the elimination of depressed areas and run-down and insanitary buildings, will be resumed after the war. The city took the first step in this direction when it acquired two sites for new building projects, one on the inner east side, and the other on the west side. These will be the Frederick Douglass Homes, costing $4,650,000, an extension of the existing Brewster project, and the Edward J. Jeffries Homes, costing $10,600,000, to be erected in the west side boulevard area.

The vital problems of improved sewage, sanitation, and water systems also are provided for. The planning committee reported there was "still much to be done" in these fields. About 150 miles of interceptor and relief sewers, together with additional pumping facilities, will be built. A budget of $67,000,000 will be provided for new sewer construction. This will include the inclosing of Baby Creek and for Creek outlets. An additional $1,830,000 will go for construction, improvement, and increased facilities at the Bluehill, Conner, and Fairview pumping stations.

Seventy miles of new water mains are to be laid, at a cost of $19,961,000, to replace worn-out mains in the older districts and to supply newer areas. The new water arteries will range from eight-inch pipings to 54-inch mains. The facilities of Water Works Park and the sewage-disposal plant will be augmented at an expenditure of more than $6,000,000. A new 20,000,000-gallon reservoir will be built at the Springwells Station on West Warren Avenue costing $845,000, and a booster station and 20,000,000-gallon reservoir will be constructed in the northwest area at a cost of $925,000.

New buildings also will increase the effectiveness of police and fire protection. Six new fire stations, including one to house the city's fireboat, will be erected.

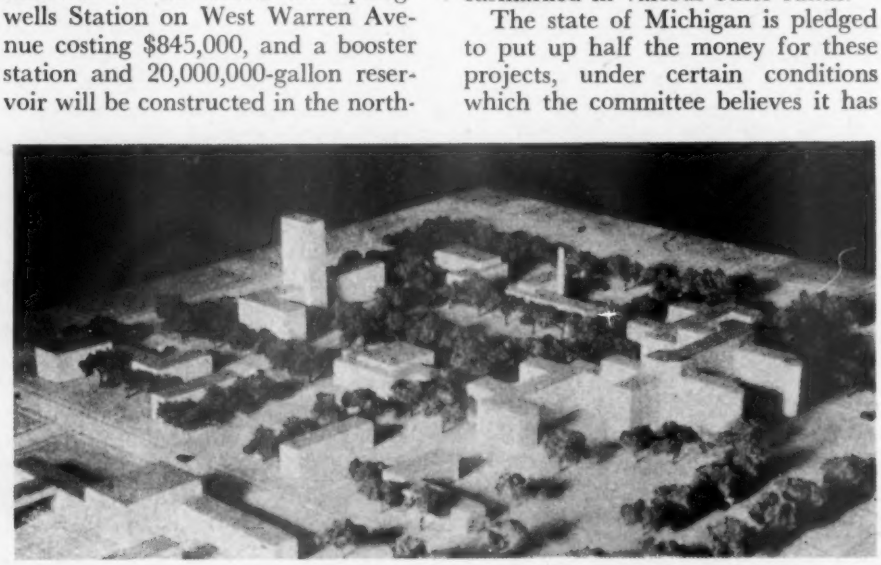
Eleven new precinct stations will be constructed for the police department for $1,400,000. Sites for eight of these already have been selected. The program also calls for a new barn to house 60 horses for the traffic division, and a boat house on Belle Island for the police patrol boat.

The House of Correction is to receive much-needed improvements. These include central dining facilities, food storage space, a guard tower, and a public waiting and rest room, to be built at an estimated cost of $180,000.

In addition to these over-all projects, the committee has planned the expenditure of $56,000,000 for a general rehabilitation and repair program for all public buildings. War-time scarcities, they found, had caused serious deterioration in these buildings, and orderly schedules of maintenance had not been carried out. These repairs will need little planning, and can be put into operation on short notice. They will be dovetailed into the major building programs as man power and material are available.

Details for financing this huge public-works program have been worked out. The city has $16,000,000 in its capital improvements fund, and an additional $1,326,000 earmarked in various other funds.

The state of Michigan is pledged to put up half the money for these projects, under certain conditions which the committee believes it has met. Some of the undertakings fall directly under federal grants, while others will come out of county funds.



A completely up-to-date medical center is being planned for Wayne University. A half million dollars will be allocated for the site, to comprise 55 acres. Estimated cost of initial structures is $20,600,000, which includes a $6,000,000 University Hospital.

Huge Quantities of Nonmetallics Needed for Los Angeles Projects

By HARRY F. UTLEY

another ON THE SPOT report

LOS ANGELES and its metropolitan area probably face greater post-war difficulties than any other major war-industry center. More than 700,000 persons have migrated to this area since 1940. Many of these have come primarily to work in the aircraft and shipbuilding plants and allied industries. As the war nears its close thousands of these workers will be thrown out of employment as war contracts are cancelled and it is not expected that many will return to their former places of residence. To take up this load a comprehensive post-war construction program has been planned by the city.

The Los Angeles program has been developed as a six-year project in line with recommendations of the National Resources Planning Board. A six-year program was worked out because it was felt that six years is long enough to determine trends and not so long that mere guessing would determine project choice in the latter years of the program.

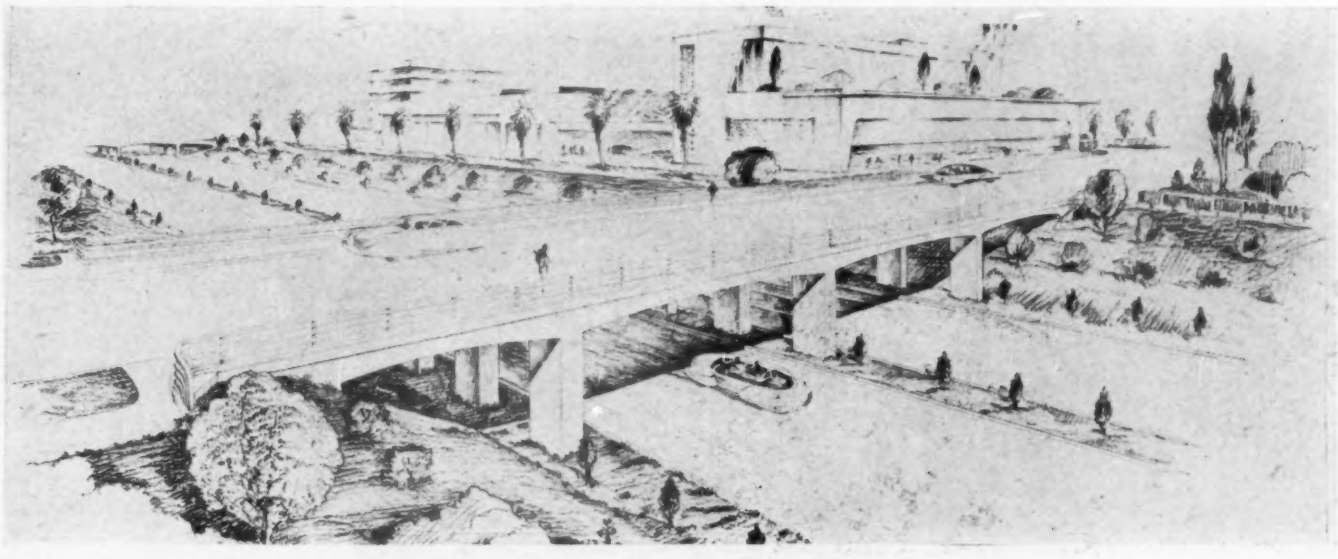
This "Six-Year Program of Post-War Construction" involves 1,078 separate projects and a total expenditure of $406,372,929. It is planned to start and largely complete 325 of these projects in the first year of the post-war period at a cost of $88,992,699.

PROPOSED POST-WAR CONSTRUCTION PROGRAM FOR LOS ANGELES

Department or Bureau	Number of Projects		Estimated Cost	
	First Year	6 Years	First Year	6 Years
Bureau of Engineering	126	441	$70,147,233	$353,434,385
Bureau of Construction and Maintenance	2	2	83,375	83,375
Fire Department	11	26	818,910	1,652,310
Health Department	8	8	2,685,000	2,685,000
Memorial Coliseum	3	5	607,970	3,226,140
Library Department	7	11	398,700	994,200
Bureau of Maintenance and Sanitation	39	76	2,209,095	2,897,066
Park Department	13	68	2,606,267	17,687,978
Playgrounds and Recreation	30	68	1,767,487	5,615,324
Police Department	17	29	5,078,224	5,237,319
Receiving Hospital	1	1	344,800	344,800
Street Lighting	16	20	762,150	5,253,650
Department of Water and Power	52	323	1,483,488	7,261,382
Totals	325	1,078	$88,992,699	$406,372,929

Huge quantities of cement, sand and gravel, crushed stone, lime and gypsum will be required for the program. To date the West Coast has not been affected by a recession in building as have other parts of the country. War buildings and housing jobs are still in process of construction as the emphasis on the war effort shifts to the Pacific. A summary of the program compiled from figures released by City Engineer Aldrich appears in the accompanying table.

As will be seen from the table, the major share of this work will be undertaken by the Bureau of Engineering and involves street and highway projects, principally parkways of the superhighway type, to a large extent. In the first year of the program an expenditure of $29,590,546 for seven important parkways is to be undertaken. These include (1) the Arroyo Seco and Harbor Parkway, (2) Hollywood Parkway No. 1, (3) Hollywood Parkway No. 2, (4) Santa Ana Parkway, (5) Aliso Street Viaduct, (6) Harbor Parkway (north of Pacific Coast Highway) and (7) Sepulveda Parkway.



• One of seven proposed parkways of the superhighway type.

POST-WAR PUBLIC WORKS - *Municipal*

Other important projects of the Bureau of Engineering during the first post-war year includes $10,193,-800 for a sanitary sewer program, the principal expenditure of which will be $6,000,000 for the first unit of the Hyperion Sewage Treatment plant which will ultimately cost $10,000,000 and is expected to be completed in two years. Fourteen storm drains, which are expected to consume large tonnages of concrete pipe, are planned for construction during the first year of the program at a cost of $7,114,110. The largest of these storm sewers will be the Central Business District Relief Drainage System, which will be constructed at an estimated cost of $4,-882,200.

Two other large projects scheduled to be started by the Bureau of Engineering during the first post-war year will be the restoration of the beaches and bay at the Santa Monica shoreline, and the enlargement of the Los Angeles Municipal Airport.

The Santa Monica Bay Project will entail an ultimate expenditure of $15,000,000 and involves 13 miles of beach frontage. This improvement will include a 13-mile drive along the ocean front with parks and playgrounds, parking areas and recreation structures on the seaward and landward sides. The greater portion of the area to be reclaimed consists of frontage now below sea level and a constant source of trouble during the rainy season. When completed, this improvement will provide picturesque drives, beach and recreational facilities unexcelled anywhere in magnitude and beauty.

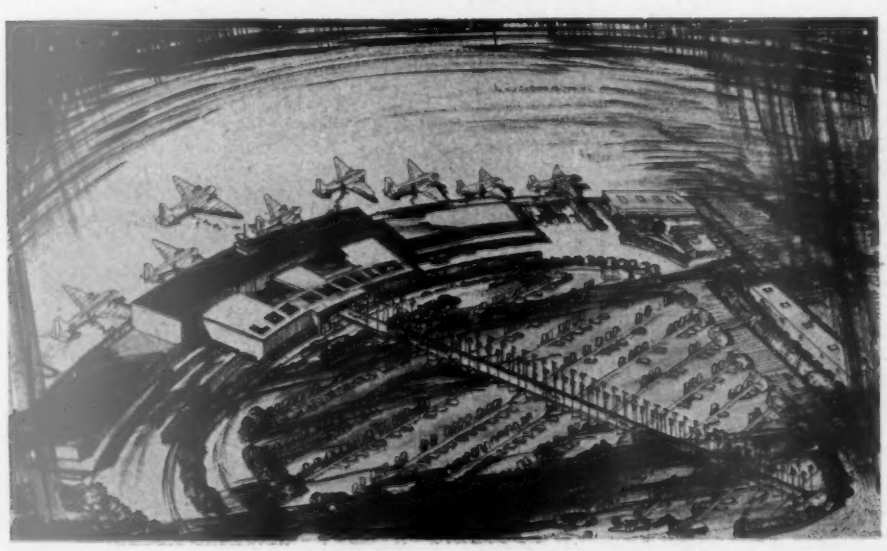
As planned, $2,100,000 would be spent on enlarging the Los Angeles Airport during the first year, with an ultimate expenditure during the six years of $12,100,000. However, it is expected that this phase of the program will be undertaken on a much grander scale because of the growing need for enlarged facilities immediately after the war. An airport expenditure of at least $10,-000,000 may be expected during the first year of the program, it is now reported.

• View of air terminal.

Eleven new fire stations in various sections of Los Angeles are badly needed and will be built in the first year after the war at a total cost of $818,910.

Heading the list of buildings to be erected by the Health Department during the first year of the program is a Public Health and Administration Building planned as a part of the Los Angeles Civic Center group at a cost of $1,225,000. Four health centers and three clinic buildings will also be built.

• Airview of proposed airport.



Seven of 11 building projects scheduled to be undertaken as part of the 6-year plan by the Library Department will be started and should be completed during the first year, according to present intentions. These include three new branch libraries, additions to three existing library structures, and a group of portable buildings.

Paving of a huge parking area adjoining the Los Angeles Memorial Coliseum will be a first-year post-war project costing an estimated $492,970. Either Portland-cement concrete or asphaltic concrete will be used, probably the latter. A still larger parking area is tentatively planned for the following 5-year period as well as a new sports and exposition pavilion to cost $2,618,-170.

A total of 39 construction projects planned for the first year of the program will be undertaken by the Bureau of Maintenance and Sanitation, according to present indications. Most of these are district storage buildings, garages, and repair shops with the exception of one large project, a huge garbage and rubbish incinerator to be erected in Vernon at an estimated cost of $1,280,000.

Recreation facilities, playfields and courts will be built at 30 of the city's playgrounds as a first-year post-war project at a cost estimated at $1,-767,487.

A new police administration building and jail costing $4,280,000 is the major improvement planned for the Los Angeles Police Department in the first year following the end of the war.

Another first-year project will be a new Receiving Hospital to cost an estimated $344,800. Several sites

(*Continued on page* 104)

Opportunity for Pit and Quarry Industries Forecast by Huge New York Building Program

By ALLEN WARREN ELLIOTT

another P and Q exclusive

APPARENTLY inspired in part by the announcement of details of a $1,270,000,000 post-war public-works program sponsored by New York City authorities, a general building boom of surprising proportions is shaping up in that city.

City, state and federal funds are already on hand to go ahead on a minimum $250,000,000 basis in 1945 on municipally-conceived construction alone, priorities permitting. A 1945 municipal capital budget for construction totalling $198,317,593 is now pending.

In the past few weeks private capital has been backing up this bullish view in the solid form of building plans which are being filed at the greatest pace in the history of the metropolis. These reached $30,000,000 in a single recent week. They have passed $85,000,000 since D-day.

What this will mean to the pit and quarry industries is problematical until the stream of plans abates, and they are still flowing at a brisk rate with no sign of a letdown. But a foretaste of post-war business possibilities is contained in the official figures in the city's public-works program.

Included in these engineering estimates are 15,225,000 barrels of cement; 4,437,500 square yards of concrete street pavement, excluding viaducts, overpasses, etc.; 11,498,000 cubic yards of crushed stone, riprap, etc.; 777,000 feet of precast concrete pipe; 6,650,000 square feet of ceiling and wall materials; and 7,875,000 square yards of plastering materials.

• Model of four-lane, two-way-traffic circular ramp leading to and from Queensborough Bridge to Welfare Island, the great hospital center in East River. Traffic is now handled by use of an elevator from bridge level to the island surface. A big, new heating plant will be located next the ramp to service the colony of hospitals already on the island.

Stone masonry is calculated at 67,000 cubic yards, cut stone at 3,948,000 cubic feet and sand is down for a total of 5,880,000 cubic yards.

As with the city program, the biggest figures in the list of private developments deal with apartment projects. The Metropolitan Life Insurance Company revealed the breath-taking architectural details of its gigantic "Stuyvesant Town" group on the lower east side of Manhattan in a three-dimensional model which shows that the $50,000,000 undertaking will be a city in itself. It will provide 8,842 apartments to accommodate 24,315 persons in 18 blocks holding 35 structures 13 stories high.

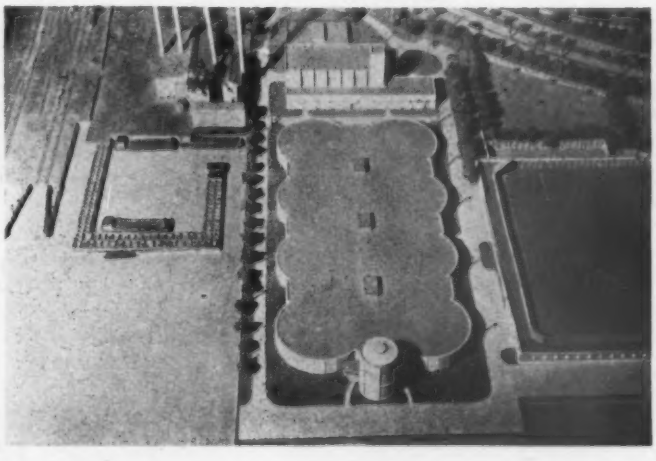
On top of this move Metropolitan announced another $6,000,000 garden apartment group in Harlem, near the projected Harlem River Drive, which is at the head of the list for actual construction. This one, "Riverton Houses," will shelter 3,400 people in 1,250 apartments.

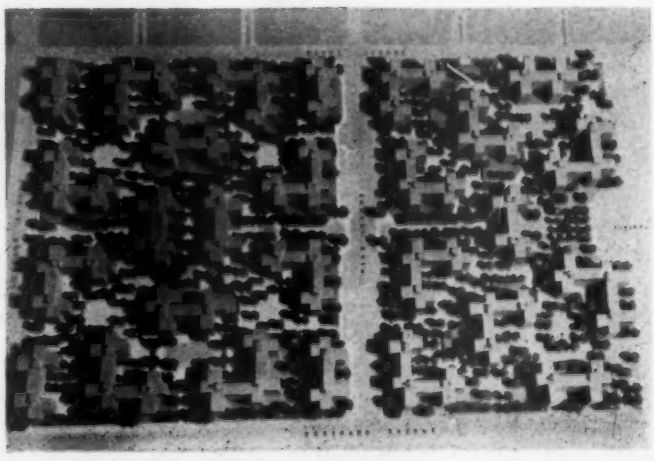
The Equitable Life Assurance Society is already in actual construction on its "Clinton Hill" in the navy-yard section of Brooklyn. This one will cost $7,000,000 and will provide 1,200 apartments. Eleven buildings will tower from 12 to 14 stories when the job is complete.

Plans filed for office buildings, mostly in the past few weeks or so, reveal some imposing figures, also. One group of four corporations headed by R. Baylor Knox of the City Bank Farmers Trust Company filed on four skyscrapers with an es-

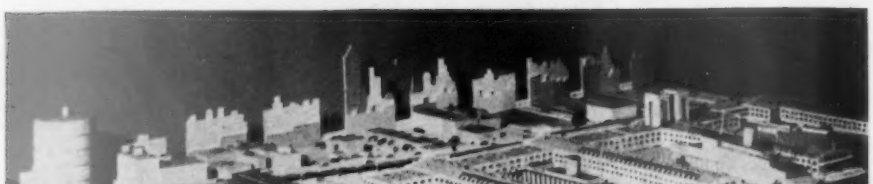
• Left: Principal sections of Owl's Head sewage reduction and treatment plant shown in three-dimensional engineering scale model as it will look when completed as part of the New York City $1,270,000,000 post-war works program. Cost is estimated at $14,500,000.

• The city has also inaugurated condemnation proceedings to obtain land for $10,429,000 Marcy Houses, low-rental Brooklyn project scheduled to open up 1,700 apartments.





POST-WAR PUBLIC WORKS - *Municipal*



• Modernization of Hudson River waterfront from 37th to 47th Street, where largest ocean liners dock is part of post-war New York construction program. Light areas indicate new construction, including fireproof piers and pier buildings, plus extensions to existing piers which will be retained.

timated value of $20,000,000. These include one structure of 50 stories in Cortland Street, another of 42 stories at Sixth Avenue between 43rd and 44th Street, a third of 35 stories between 59th and 60th Streets in Madison Avenue and a fourth of 33 stories in Beaver Street. The Sixth Avenue building will cost $9,375,000, will rise 495 feet and will provide 1,084,000 feet of office space.

Another $5,000,000 building near the Hudson Terminal area will reach 574 feet with a tower achieving 51 stories. A "little brother" to the Chrysler Building, occupying most of the remainder of the block between 43rd and 44th Streets and Lexington and Third Avenues, will reach 435 feet as compared with its "big brother's" 1,046 feet. Sixth Avenue and 39th Street will be the site of a $3,000,000 office, store, showroom and theater building 510 feet high.

To add to the boom spirit, the Port of New York Authority revealed a survey to indicate that post-war-in-Europe traffic congestion, especially of commercial vehicles, will necessitate four more huge union truck terminals in New York City and vicinity. They filed notice to property owners in a move to get ground near the Holland Tunnel for a 1,000-foot-long, two-story structure to cost $2,500,000. In addition, they nursed through the U. S. Senate a $400,000,000 bill to provide new and improved roads in the Port district, which is in New York City and northern New Jersey.

There is every sign that the municipal authorities intend to go through with the giant works program.

Condemnation proceedings were instituted by the city for its Abraham Lincoln Houses, which will adjoin Metropolitan Life's Riverton Houses, in the forthcoming Harlem River Drive locality. Abraham Lincoln Houses will cost $7,293,000. The third project to complete the main Harlem picture will be the $8,000,000 James Weldon Johnson Houses. The city also inaugurated condemnation actions for its $10,429,000 Marcy Houses, a low-rental Brooklyn development scheduled to open up 1,700 apartments.

In three-dimensional form, the layout of the twin Lillian Wald and Jacob Riis Houses, another City Housing Authority project was made public. These will be in the neighborhood of Metropolitan Life's "Stuyvesant Town" on the lower east side of Manhattan. Together they will cost about $20,661,000. The east side has been steadily lifted in the character of its surroundings by the elimination of several elevated structures and the war-time completion of East River Drive, which will feed into the Harlem River Drive.

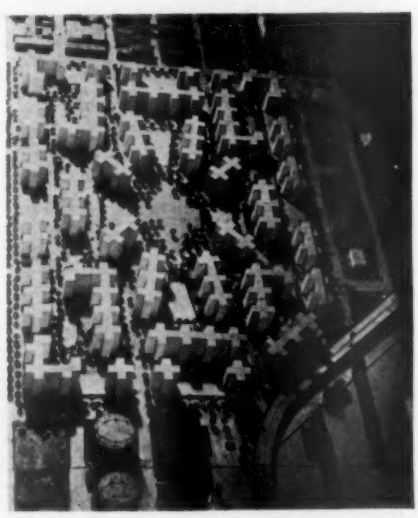
Between Brooklyn and Manhattan Bridges, also on the lower east side, the New York City Housing Authority has scheduled in the huge Governor Alfred E. Smith House, to cost $14,088,000.

Other housing projects of standard apartment construction will include St. Mary's Houses, $5,526,000; Morrisania Houses, $8,914,000; Amsterdam Houses, $6,080,000; Elliott Houses, $3,311,000; Astoria Houses, $5,484,000; Gowanus Houses, $5,589,000; Brownsville Houses, $6,999,000 and extensions to the already completed Vladeck, Kingborough and South Jamaica Houses, totalling $13,634,000. The latter are filled.

Listed also are 60 new elementary schools, 10 health centers, 94 playgrounds, 14 hospitals, 16 fire houses, 12 police stations, 7 sewage-treatment works and more than 500 extensions to existing structures and facilities. Eight new parkways will be pushed through, but they are not likely to be the first on the list for action, with the exception of Harlem River Drive.

Among the other similar projects will be seven high schools each above the $3,000,000 level, ten hospitals topping $5,000,000 each, and three parks each above the $6,000,000 mark.

These big figures run throughout the whole program. In the matter of sewage treatment and disposal, for example, the Owl's Head plant will add $14,500,000 to the public-works figures and the Hunts Point plant will run it a close second at



• "Air view" of model of $50,000,000 "Stuyvesant Town" housing development of Metropolitan Life Insurance Company to be constructed on lower East Side of Manhattan. It will include 8,842 apartments and 24,315 occupants in 16 blocks holding 25 buildings each 13 stories tall.

$14,000,000. The Newtown Creek Sewage works will cost $12,000,000 and six other, smaller ones are listed for action. Other sanitation projects lift the total for sewage disposal to $86,640,000, by such developments as the $30,000,000 Upper West Side intercepting sewer. Straight sanitation works add $8,740,000.

A similar breakdown of proposed expenditures shows: chief medical

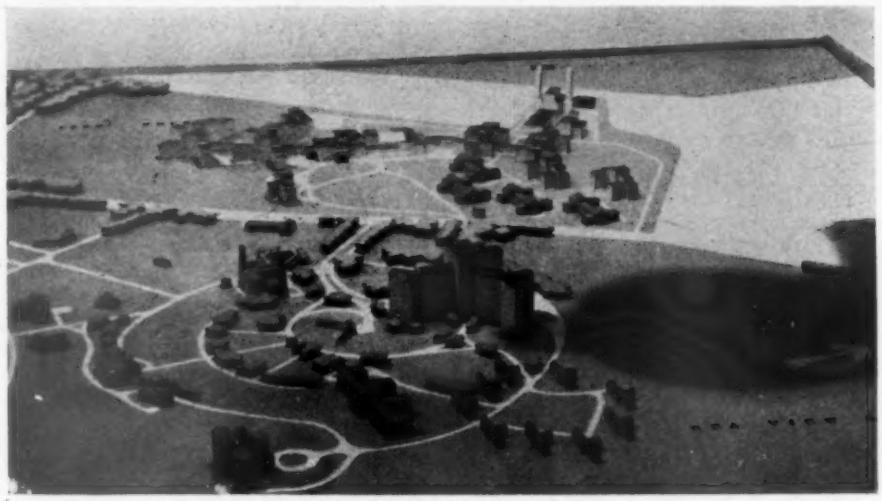
examiner $500,000; correction, $6,374,000; education, $118,678,000; fire, $5,524,000; health, $5,065,000; higher education, $7,448,000; hospitals, $98,586,000; libraries, $6,262,000; marine and aviation, $76,018,000; markets, $1,970,000; museums and institutions, $17,984,000; parks, $77,982,000; police, $3,597,000; public-works buildings, $12,053,000; public-works bridges, $16,338,000; purchase, $620,000; transportation, $100,870,000; water supply, $106,000,000; water, gas and electricity, $10,380,000; and welfare, $600,000.

Some of these items are swelled by expenditures under separate agencies, such as the offices of the borough presidents. Manhattan will spend $70,785,000; the Bronx, $64,110,000; Brooklyn, $28,758,000; Queens, $60,177,000; and Richmond, $14,797,000.

Other agencies participating, like the City Housing Authority which has $115,282,000 slated principally for apartment projects, are: City Tunnel Authority, $38,000,000; New York State and United States Government for highways, $89,000,000; United States Government for grade crossings, $2,546,000; the state for grade crossings, $8,957,000; the state for parkways, $7,500,000; and the Triborough Bridge Authority approximately $1,000,000.

Many of the construction features indicated in these details are already moving, a little here and a little there where materials and priorities are available. For example, work started in earnest early in October on the $60,000,000 Idlewild airport which will open unfinished September 15, 1945, regardless of the war situation at the time.

Mayor F. H. LaGuardia is pressing for priorities for some 700 tons of nuts and bolts, the lack of which, strangely has held up the progress of fabricated steel work since 1942 on the Brooklyn-Battery Tunnel, an arrangement of vehicular tubes which was one-third completed when construction was stopped. Finishing this job will throw $15,000,000 into the $1,270,000,000 city-state-federal construction pot to keep jobs boiling.



• General view of Tuberculosis and Chronic Disease unit of King's County Hospital in Brooklyn. Part of the $7,448,000 hospital program, it will cost $3,250,000.

• Something like $16,700,000 will be spent on the Sea View Hospital project and the New York Farm Colony, twin Staten Island developments scheduled into the $1,270,000,000 New York City post-war works program.

At the East River side of the park, a new Whitehall Ferry Building will dock the Station Island Ferries, used daily by thousands, and the inner ends of several piers will be slashed to permit the East River Drive, completed during the war, to connect with the Brooklyn-Battery Tunnel.

Also of interest to those who will travel to and from Europe through New York on the first-class liners will be the complete removation of ten city blocks of piers including the 42nd Street area of the Hudson River, which is the terminal for the largest trans-Atlantic lines.

The city has "gone modern" with plans for a four-lane, two-way-traffic circular ramp leading to and from Queensborough Bridge to Welfare Island, the great hospital center in East River. Traffic is now handled with difficulty by use of an elevator from the bridge level to the island surface. A big, new heating plant will be located next the ramp servicing the colony of hospitals already on the island.

Most of the people of the city will never see two huge projects which will be located on Staten Island, not far from the Halloran Army Hospital, the largest of general hospital sheltering wounded United States veterans. These will be the Sea View Hospital and New York Farm Colony. Together they will cost $16,700,000.

A quick rise in major general construction is expected to begin ap-

proximately six months after the European phase of the war comes to a close. The total employment in the city itself is expected to reach around 80,000 persons at the end of the first year of peace in Europe, passing 200,000 about 18 months from the first day all is quiet on the German front. The top level of activity is expected to last about six months with a rapidly descending curve cutting the payrolls by one-half in the ensuing six months.

At the last check-up, 21 per cent. of the construction plans are complete, 18 per cent. more are half completed, 37 per cent. are less than 50 per cent. completed and 24 per cent. have not been started.

Some of the official estimates for materials are stupendous. About 344,750,000 concrete and clay bricks will be required. Tile, including hollow, ceramic and glazed, is calculated at 42,525,000 square feet. The vitrified pipe requirements are set at 2,762,000 feet. Flooring, including tile, asphalt and terrazzo, will amount to 25,025,000 square feet.

Also, 163,625,000 board feet of rough and finished lumber, 681,500 tons of structural steel, 787,500 square yards of block pavement, 5,600,000 square yards of asphalt pavement, 3,975,000 square yards of bituminous pavement, 19,775,000 feet of timber piles, 176,800 tons of steel piling, 5,702,000 square feet of windows, frames, sashes and glass, 103,000 units of doors and bucks, 2,025,000 pounds of finished hardware, 66,900 tons of cast iron pipe and fittings, 62,700 tons of wrought iron and steel pipe and fittings, 340,900 tons of reinforcing steel, 4,130,000 cubic yards of top soil, 10,900 tons of fertilizer, and 747,300 pounds of grass seed will be needed.

But even these estimates are not complete, for the approximate figures on fabricated and prepared materials includes: miscellaneous iron and steel, 108,200 tons; iron and steel castings, 22,600 tons; metal lath and furring, 17,300 tons; copper and lead and tin (flashing), 2,100 tons; brass and bronze-work, 1,800 tons; roofing materials, 14,700,000 square feet; metal partitions, 1,335,000 square feet; asphalt for pavement, 115,500 tons.

Says Mayor La Guardia:

"We are doing our part in preparing for peace. When home-coming parades of our victorious troops, receptions and celebrations are over, establishment of employment centers, classification for jobs, rehabilitation and education of the veterans will be necessary, but will all be of no avail if there are no jobs for these men. We must also remember the millions of workers now employed in the war industries who will be displaced when the demand for the weapons of war is over and particularly during the transformation to peace-time production. Even peacetime industry will lack production-orders if these people are not employed.

"The Post-war Works Program is a definite expression of our faith in victory, in the future of our country and of New York City. We propose to go ahead and to be ready for the great changes that are coming. That is why we are planning now.

"Since Pearl Harbor I have had no doubts or fears about the outcome of the war, but I have been deeply concerned with what was going to happen when our tremendous war activities stopped. Cancellation of war contracts, demobilization of men in the armed forces and of war workers, cuts in government spending, no matter how gradual and humane, are bound to produce the most serious unemployment problems of our history. Any responsible public official who went through the depression years dreads a repetition of that terrible experience. States and cities everywhere were sadly lacking in detailed plans for worth-while public improvements so that, as a result, we were forced for many months to resort to projects not much above leaf-raking and make-work.

"However, we now face a much more serious problem of repair, obsolescence and deferred construction than we did in the depression. When the war ends we must be prepared with a sizable program of useful and necessary public works.

"New York City has taken the lead."

The city is not an important producer of primary materials in comparison with its population and wealth and four or five non-New Yorkers in such fields as cement, stone, gravel, clay and steel will obtain employment through the program for every New Yorker put to work. The same is true of out-of-town fabricating plants. This argument was advanced a few weeks ago by Mayor La Guardia in a plea for $150,000,000 in federal funds to match $150,000,000 in to-be-borrowed city funds and assure at least a $400,000,000 outlay on the program in 1945, including $100,000,000 in delayed work for which money is available.

Although the "out-of-town labor and industry" argument is a potent one, there is always a chance that the $150,000,000 federal "matching fund" request will be snagged in Washington. If this happens, there is every sign that city, state and private sources will go ahead in 1945, or sooner if priorities permit, with the program on a $250,000,000 scale for the first year, with provisions for quick expansion.

● Los Angeles (*from page* 100)

have been under consideration but none definitely chosen.

The Los Angeles Regional Planning Commission has prepared a post-war public-works program covering 434 projects to cost an estimated $136,000,000 and embracing a wide variety of construction. Storm drains and other sewer work will aggregate $38,000,000 and the County Road Commission has plans completed for new construction to cost $4,228,000, including the proposed $2,505,0000 Los Angeles River Freeway.

Another post-war activity will be flood control. The comprehensive plan of the United States Engineers for flood control in the Los Angeles and San Gabriel River basins, for which $110,000,000 has been authorized by the Congress, is only about one-third completed and about $30,000,000 of this amount remains unexpended until after the war. The United States Engineers also have $6,000,000 in work at the Los Angeles-Long Beach harbor, an unfinished program for flood control on the Santa Ana River, and improvements are planned for Newport Bay Harbor to cost approximately $750,000. The Los Angeles County Flood Control Department has projects planned, not included in the United States Engineer program, to cost an estimated $38,517,000.

Quaker City Mayor's Election Based on Public Demand for City Planning

another P and Q exclusive

AN unusual meeting took place in a Philadelphia hotel last year just before the city's mayoralty election. One thousand persons assembled there to ask both candidates this question:

"Do you believe in city planning?"

In turn, Acting Mayor Bernard Samuel and his opponent, William C. Bullitt, rose and gave their wholehearted support to the City Planning Commission and its work. The commission had been created as an official municipal body in December, 1942, in response to a widespread demand for prompt and competent planning of full-scale public-works programs to meet the needs of the Quaker City.

Mayor Samuel, the successful candidate, put his views this way that night: "We are spending $32,000,000 yearly on our children to make them good and useful citizens. But every teacher knows that his or her best efforts may be nullified if the homes and neighborhoods in which the children live are not healthful and decent."

With endorsements of this kind, the Planning Commission went to work, and recently it presented the City Council a six-year program of public works to be undertaken between 1945 and 1950.

Plans for $205,592,824 Now Ready

Now ready with plans and specifications are 604 projects totaling $205,592,824 for construction during the first two or three years of that period. In the planning stage are 364 additional projects costing $164,464,712. And, as conditions permit, $12,146,182 will be spent for repair, replacements, and minor construction work on public buildings.

The commission discarded the notion that city planning means the mere plotting of streets and alleys. It assumed, as do many similar bodies in other forward-looking cities, that its job is to determine such problems as the relation of industrial to residential sites, the location of public buildings, the design of parks and recreational areas, the flow of traffic by road, railway, air and water, and the determination of migration of populations and the changing housing needs.

General Program

Through this kind of planning a basic picture of the post-war needs of Philadelphia has taken shape. Long an impediment to the orderly growth of the central portion of the city, the "Chinese Wall" caused by the elevated Pennsylvania Railroad tracks is to be removed. The shorelines of both the Schuylkill and the Delaware Rivers are to be improved, and adequate sewage-disposal methods provided. Additional construction will be undertaken on the North Broad Street and Market Street subways, and probably a ring-subway will be built connecting south, west, and north Philadelphia and the northeast, with the object of relieving traffic at the heart of the city, and affording better access to such places as the University of Pennsylvania, Convention Hall, and Fairmont Park. Finally, the slum areas, especially those south of Pine Street and east of Broad, ought to be eliminated so that "The City of Homes" can wholly fulfill its reputation.

The plans proposed for immediate undertaking are only a part of this over-all picture. The present program is intended to make available immediately a shelf of projects which in some cases are necessary for federal or state aid, and to meet a possible unemployment lag after the war while industry adjusts to peace-time production. These projects, whose plans and specifications were drawn under a city council allocation of $692,000, will provide 120,000,000 man-hours of useful employment.

Surface and elevated railroad right-of-way in central areas are the most common obstacles to the uniform development of a modern city. In Philadelphia the chief obstruction of this kind is the "Chinese Wall" formed by the Pennsylvania Railroad's elevated tracks east of the Schuylkill River on the north side of Market Street. Because it impedes transportation developments, causes depressed property values, and prevents further expansion in the central portion of the city, the Planning Commission has decided that the structure must be removed.

The program calls for demolition of the elevated tracks and the old Broad Street station. Instead, the Pennsylvania tracks will be reconstructed underground, and two new stations will be built, one at Thirtieth and Market Streets, and the other at Sixteenth and Filbert St.

Schuylkill Avenue West will have a new river wall from Spring Garden to South Street, with a high-level street directly above it, and Pennsylvania Boulevard will be constructed on the line of Filbert Street from Fifteenth to Thirtieth Streets, with a bridge over the Schuylkill River, and the intersecting streets widened between Market and Cuthbert, at a total cost of $12,317,000.

These improvements of the central area will increase real-estate values and encourage large-scale private construction.

Another right-of-way to be removed is that of the Baltimore & Ohio Railroad's Delaware Avenue extension, to be substituted by trackage and facilities in Swanson Street, at a cost of $750,000.

Streets and Highways

More and better thoroughfares will be essential in the post-war period with the lifting of restrictions on automobile production and gasoline use. Hence a comprehensive program of improvements of city streets and highways is proposed. These projects, at an estimated cost of $39,550,000 can be completed in less than three years.

An industrial highway, entering the city by way of Essington and Penrose Avenues, and extending as a skyway bordering the Delaware River to serve as an outlet into the northeastern section of the city, will cost $13,043,000. Improvement of the Vine Street approach to the Delaware River bridge will take $3,300,000. Roosevelt Boulevard from Broad Street to the county line will be improved for $4,600,000.

About 55 miles of heavily traveled streets, which are not main thoroughfares now but which will become so with the growth of the city, will be improved at an expenditure of $18,607,000. An additional $2,712,648 will be spent for raised concrete safety zones, permanent traffic islands, and signals.

POST-WAR PUBLIC WORKS - *Municipal*

The need for improved transportation facilities also is a recurring problem to every municipality, and Philadelphia is acutely aware of it. For the immediate future, however, only two of these projects are to be attacked. Considered of prime importance to the future development of the central section is the completion of the Market Street subway from Twentieth Street to Forty-Second Street, estimated at $24,000,000, using the tunnel already completed under the Schuylkill River. The other is the completion of a concourse under and around the city hall for a total outlay of $182,510.

Wharves The planned development of buildings and docks of the port of Philadelphia was halted at the beginning of the depression, and nothing has been done for more than a decade. The first job to be undertaken in this field is the completion of Pier 80 of the South Delaware wharves, located near the foot of Snyder Avenue. The foundation for a two-story structure already has been laid, at a cost of $1,300,000, but the structure itself remains to be built.

Completion of the pier, at a cost of $2,650,000, would add berths for four ships 500 feet long, and help offset the loss of other port facilities through depreciation and obsolescence. Already $49,886 has been allocated for the preparation of plans and specifications.

Airports The Philadelphia Municipal Airport, developed at a cost of $11,500,000, was opened in 1940. But in December, 1943, all use of the field was denied for the duration of the war by a ruling from the Federal Interdepartmental Air Traffic Control Board, and since then the city has been without commercial airline service.

For necessary improvements of the airport to bring it up to standards expected in the post-war period—with new buildings, hangars and runways—a total outlay of $8,275,000 is contemplated. In addition, an estimated $2,475,000 will be spent to put the Northeast Airport into the Class A-1 commercial class. Thus the city will be served by two first-class airports.

In the field of recreation the plans provide for improvement of nearly all existing play areas, recreation centers, and swimming pools. This work will be done in co-operation with the Board of Public Education and the Commissioners of Fairmont Park. New facilities for recreational development in Fairmont Park alone will come to about $4,150,140.

Schools and Other Buildings The Board of Public Education plans to undertake a program of 188 construction projects, including school buildings and new recreation facilities. This program includes: the enlargement of 57 school playgrounds where present facilities are inadequate, costing $3,516,000; new auditoriums, playrooms, classrooms, and other alterations and additions in 38 schools, $5,200,000; improvements in 42 other school buildings, $2,085,000; miscellaneous repairs, $3,600,000.

A total of $22,624,000 will be spent for new buildings and sites for seven elementary schools, four junior high schools, two senior high schools, three vocational schools, seven athletic fields, and one central recreation building.

In the field of municipal buildings both new structures and additions to old structures are planned. For improved police protection $792,965 has been allocated for the building of new stations and the enlarging of others. For the fire department new fire stations and equipment costing $2,901,645 are contemplated.

Penal and correctional institutions were given a budget of $2,498,677. This includes new buildings and additions for the House of Correction, the Holmesburg County Prison, and the Moyamensing County Prison. Two new Houses of Detention are to be built, one for Juveniles costing $815,000, and the other for Adult Witnesses and Untried Prisoners costing $2,000,000.

New buildings and additions to the Philadelphia General Hospital and the Philadelphia Hospital for Contagious Diseases will call for the spending of $5,461,000. A new Reception Center for Dependent Children for the Department of Welfare will cost $192,000.

The Delaware River Tunnel also has been scheduled for immediate consideration in the post-war period. It is considered of prime importance to the planning of the metropolitan area as a whole. The tunnel will run between Gloucester County, New Jersey, and Delaware County, Pennsylvania, entering just south of the Philadelphia Municipal Airport.

Sewage Treatment Although not as spectacular as some of the other projects, the collection and treatment of sewage, the disposal of refuse, and the rehabilitation of Philadelphia's waterworks system are considered the most urgent problems facing the city. Now being discharged daily in to the Delaware River is an average of 400,000,000 gallons of sewage. Although this does not pollute the city's water supply, it does produce evil-smelling and insanitary conditions.

A total of $14,032,269 is budgeted for new sewage and drainage construction, including some 57 miles of interceptor and other types of sewers. Also the Northeast treatment plant is to be rehabilitated ($7,348,000), and two new treatment plants are to be constructed—the Southwest ($21,283,600), and the Southeast ($11,011,500). About $3,100,000 will be spent for reconstruction of old sewers, $1,471,000 for the Sandy Run main branch sewer, and $1,049,000 for the Penrose Avenue sewer combined system. In addition, $17,326,000 will be provided for storm flood relief, including sewer extensions, relief sewers and bridges.

The city council has allocated $175,000 for plans and specifications, and has prepared a sewer-rental ordinance which will make the whole project self-supporting. Within two months after the war ends $13,000,000 worth of contracts in this field can be let immediately, and an additional $18,000,000 will be ready not later than six months after the peace.

Satisfactory refuse disposal—both by incineration and by land dumping—also has been provided for. The city has outgrown its refuse dumps, and the distances of hauls to the dumps has greatly increased. Refuse disposal incinerators, costing $8,425,950, will be built, and land purchased for disposable ashes.

Water Supply The other basic problem—that of rehabilitating the city's waterworks — has been attacked directly by the voters

themselves as well as by the Planning Commission. For this purpose the voters have approved an $18,000,000 waterworks debt which will not be restricted by the legal limitation on the city's general borrowing power. The debt will be self-liquidating.

With this money the city's main station is to be reconverted and new filtration plants constructed. Among these projects are: the installation of small mains throughout the city, $1,290,000; arterial mains for various parts of the city, $2,612,700; new flocculating and coagulating basins, Queens Lane filtration plant, $1,136,000; and at the Torresdale filtration plant, a new filtered-water pumping station, $1,064,700; flocculating and coagulating basins, $1,840,200; and new rapid sand filters, $3,896,600.

Financing Like most other cities, Philadelphia has a limit on the amount of indebtedness it can assume. However, the Planning Commission has built its program around those projects which can be financed immediately in order to prevent delays in trying to unravel intricate financing problems.

Thus, the waterworks improvements have been provided for through the voting of a special bond issue. The sewage-treatment program will be financed out of rentals as a self-supporting unit.

The city-state highway development will be paid for largely out of the state automobile-license fund, with additional contributions by the federal government under the recently-enacted national highways bill.

As for the extension of the Market Street subway and the removal of the "Chinese Wall," the contribution to the city will be so substantial —adding new real estate values for increased taxation and other lands which up to now have been tax-exempt—that the increased income to the city will more than offset the expenditures.

Repairs and maintenance will come out of the current budget. Because of the financial difficulties of the depression years, followed by war-time restrictions on labor and materials, it has been impossible for the city to keep pace with the need for repairs and replacements on existing public buildings. To begin this job of catching up with long-deferred work, an estimated $12,000,000 will be spent immediately after the war for minor constructions, replacements and repairs.

Indicating the seriousness with which the whole program is viewed, the commission urged that private engineering and architectural organizations be employed wherever necessary to supplement the work of the city departments in preparing plans and specifications. The primary consideration is to see that the job is done.

$167,464,712 for Other Projects Nothing has been said here of the 364 additional projects totaling $167,464,712 which are still under consideration by the commission. They will be reported next September when the commission again offers its annual report to the city council.

The projects recommended for immediate attention are the sewage-treatment, waterworks-rehabilitation, and city-state highways programs. Plans and specifications already completed for these improvements would provide at once for $23,800,000 worth of work, giving 5,700,000 man-hours of employment. Additional plans and specifications on these projects now being processed can be ready in the spring, for work costing $36,600,000 and providing 11,253,000 man-hours of work.

A number of other projects could get under way within six months. These include flood relief, additional sewers and drainage, highway bridges, projects relating to railroad terminal improvements, grade-crossing elimination, street paving and repaving, elimination of dead ends in the water-distribution system, and reconditioning of water mains. Approximately $15,900,000 of such work is now ready to begin, furnishing 4,052,000 man-hours of employment. An additional $18,435,000 in projects can be ready at the end of six months, giving 5,712,000 man-hours of work.

The projects for repair, replacement and minor construction will offer an excellent opportunity to employ labor quickly on projects that do not require extensive planning. Immediately 5,000,000 man-hours of labor can be provided in this field, and an exhaustive survey of further needs would increase this total by 5,000,000 man-hours.

Westvaco Adds Kiln to Process Magnesite

The Westvaco Chlorine Products Company is operating a fifth kiln at its Newark, California, plant to calcine crude magnesite, shipped from the deposit at Luning, Nevada, for use in making oxychloride cement.

The company is also now using both calcined dolomite and calcined oyster shells to precipitate magnesia from sea-water bitterns. The magnesia content of the dolomite is precipitated along with that of the bitterns in the process.

Pinite Production Good at California Location

Production of pinite, a hydrous silicate of aluminum and potassium, continues steadily from a deposit in American canyon near Rochester, operated by Gladding, McBean & Co. of California. Material is shipped to the company's plant at Pittsburg, California, for manufacture of crucibles, furnace lining, fire brick and other products resistant to intense heat.

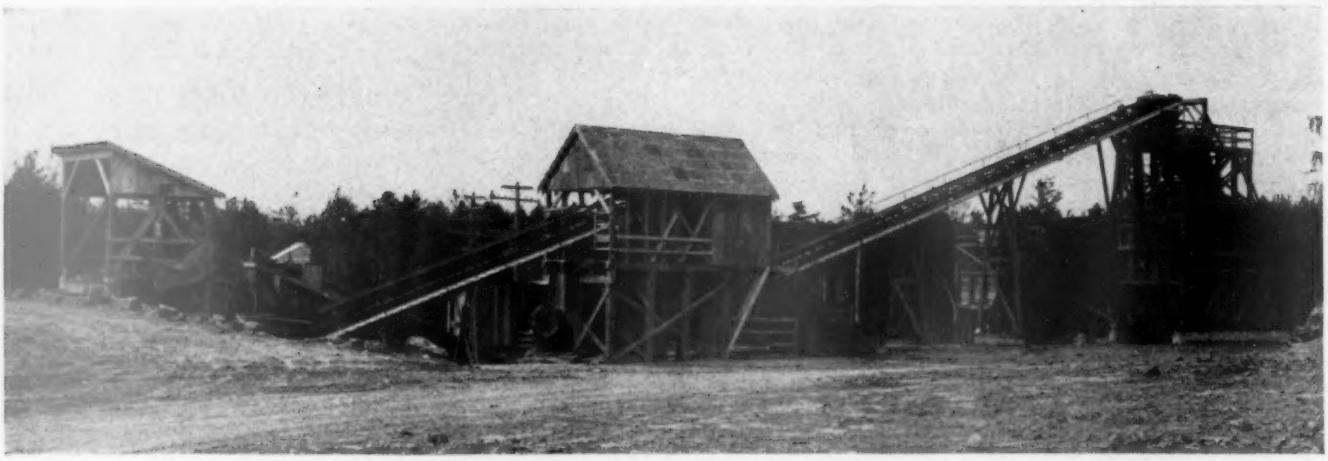
The deposit has been worked several years and is said to be the only commercial one of its type known to exist in the United States. A. E. Evans is in charge of operations.

An inspection of the property was made recently by C. W. Planje, San Francisco, vice-president of the company, George Middleton of the Lincoln plant operated by the corporation at Lincoln, California, and Al Wallen, superintendent of the company's properties at Ione.

Lehigh Stops Lime Manufacture at Buffalo

According to a recent announcement the Lehigh Portland Cement Company has ceased the manufacture of lime at its Buffalo, N. Y., plant. It is understood that the action was taken in anticipation of injunction proceedings by the city of Buffalo to compel the company to eliminate a dust nuisance allegedly caused by the lime burning.

Commercial Aggregate Production in 1944 Down About 14 Per Cent.



• The new crushed-stone plant of Blue Rock, Inc., at Portland, Maine, one of the few new aggregate plants of the year.

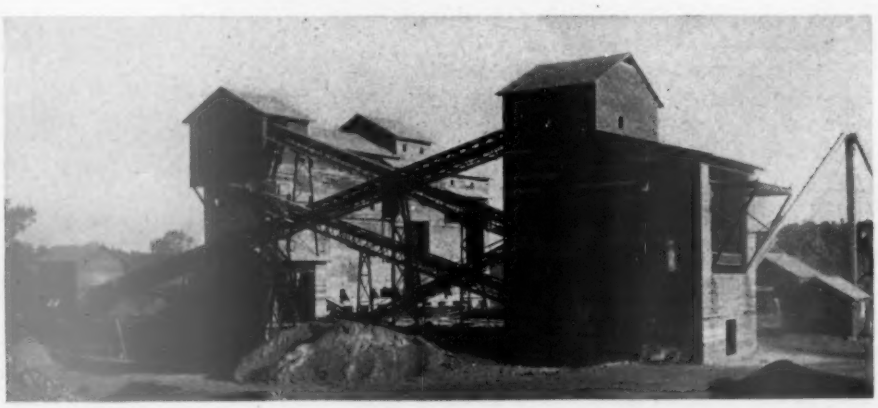
THE information available on the 1944 commercial production of nonmetallic minerals—sand and gravel and crushed stone—and of slag, used chiefly as aggregates, is far from complete but there is no doubt that it was considerably below the 1943 level. This was a continuation of the decline which began late in 1943 when the tapering off of our huge war-construction program caused a sharp drop in the volume of building construction. It is doubtful if the total 1944 commercial production exceeded 310,000,000 tons which is about 14 per cent. below the 1943 volume of 355,000,000 tons. Rough estimates based on an anticipated 28 per cent. increase in construction volume indicate a 1945 volume of about 345,000,000 tons, an increase of 11 per cent.

Sand-and-Gravel Production

1943 The largest share of this decrease in business was borne by the sand-and-gravel industry which depends almost entirely on construction for its volume. The commercial output in 1943 dropped about 24 per cent. to 176,469,256 tons from the all-time high of 232,947,787 tons set in 1942. This drop was almost entirely in those classes of materials used in construction. The drop in sales for building was 33 per cent. from 92,425,237 to 62,032,900 tons. This compares with a drop of about 47 per cent. in construction volume. Sales for paving dropped 23 per cent. from 94,181,612 to 72,490,426 tons. Sales for railroad ballast dropped off 17 per cent. from 25,080,316 tons to 20,727,252 tons in 1943. The only gains shown were in sands used for glass manufacture, molding, grinding and polishing, engine sand, etc.

1944 With the construction volume in 1944 down about 40 per cent. from 1943 it seems safe to estimate drops of 27 and 17 per cent., respectively, in the production of sand and gravel used for building and paving, to totals of about 45,000,000 and 60,000,000 tons. Assuming no change in the other categories including railroad ballast, this makes a total commercial production in 1944 of about 147,000,000 tons, or an over-all drop in commercial production of 16 per cent. from 1943.

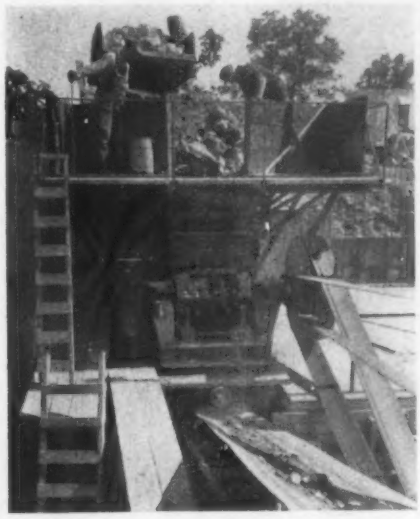
Estimates for 1945 The construction volume in 1945, according to usually reliable estimates, will be about 28 per cent. over that in 1944, provided the European phase of the war does not end early in the year. As most of this increase will probably be of the type ordinarily supplied by commercial plants it seems safe to estimate an increase of 20 per cent. in the production of sand and gravel for building and paving, or a total of about 126,000,000 tons. Again assuming only minor changes in the other categories, this would mean a total commercial production of about 168,000,000 tons, an increase of 12 per cent. over 1944.



• View of the new Old Colony Crushed Stone Company's plant which shows the arrangement of conveyors between tertiary crusher building at right and main building in background.

Crushed-Stone Production

1943 The crushed-stone industry in general has not been seriously affected by the drop in construction volume because a large part of its output is used by industries which are either unaffected by the war or are experiencing a boom because of it. As a result, in spite of a drop of about 47 per cent. in construction and 30 per cent. in cement shipments from 1942, the industry in 1943 produced 170,511,530 tons, only about 12 per cent. below the record volume of 1942. Gains were actually made in the output of metallurgical and refractory stone, stone for alkali, calcium carbide, and glass manufacture, asphalt filler, agricultural limestone



• The primary crusher at the Neuheisel agstone plant.

and several other products, which partly compensated for the decreased demand for concrete and road metal, riprap, sugar rock, and a few other products. Several other categories, such as railroad ballast, paper-mill stone, etc., showed little change. For this reason the drop of 23 per cent. in the concrete and road-metal demand resulted in only the 12-per cent. drop in total output.

1944 There is no reason to believe that any important category other than concrete and road metal suffered a further appreciable drop in 1944 as most of this material is used directly in the war effort which has not slackened appreciably. No official figures are yet available, but it is safe to assume that the demand for this type of stone in 1944 fell off in approximately the same proportion to the drop in construction volume and cement production as it did in 1943, or about 20 per cent.

The discrepancy between the percentage of construction loss and the loss in cement and aggregate production in both years can probably be attributed to the fact that much of the war boom construction was of a temporary nature not requiring much cement or aggregate. This figure would be about 66,000,000 tons as compared to 82,412,380 tons in 1943 and 107,701,010 tons in the record year of 1942. This figure added to the comparatively stable base of about 87,000,000 tons for all other types of crushed stone—1942 and 1943 totals were 86,836,020 and 88,099,150 tons, respectively—would mean a total output for 1944 of about 153,000,000 tons. This is a drop of only 10 per cent. from 1943.

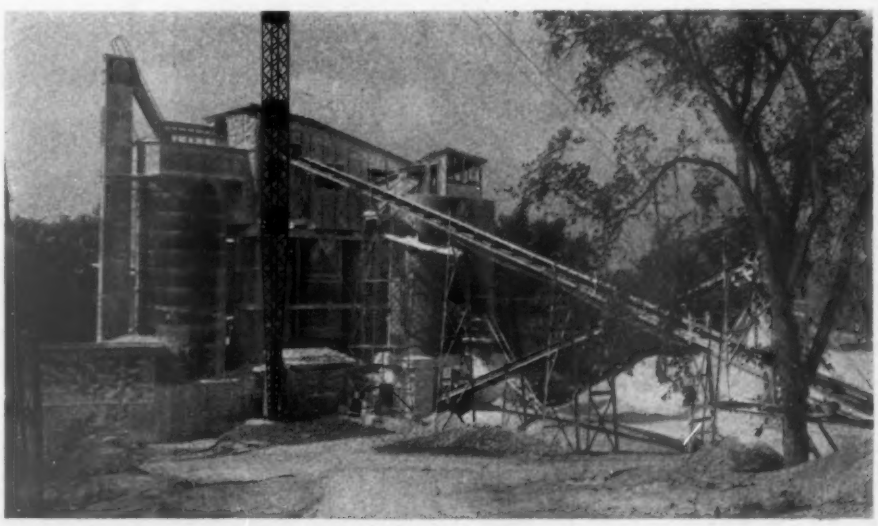
Estimates for 1945 By applying the same reasoning a rough estimate can be made of the total expected crushed stone production in 1945, provided that the war in Europe does not end early in the year. The best estimates available point to an increase of about 28 per cent. in the volume of new construction. As most of this construction will probably be of a more permanent type than the war boom construction, the volume of additional aggregates required should be more nearly in proportion, perhaps as much as 22 per cent. This points to a possible total consumption of about 80,000,000 tons of concrete and road metal. Added to the relatively stable figure of 87,000,000 tons for all other types of crushed stone, this would indicate a possible total production of about 167,000,000 tons in 1945, an increase of about 8 per cent. over 1944.

• The new agricultural-limestone plant of the Neuheisel Lime Company.

Non-Commercial Production A significant trend has been the dropping off in the noncommercial production of crushed stone, the figures for which are included above. Most of this type of production is sold as concrete and road metal and this dropped 51 per cent. in 1943 to 7,507,770 tons from the 15,449,080-ton level of 1942. This followed drops of 55 per cent. in 1942, 7 per cent. in 1941 and 16 per cent. in 1940. The peak output in 1939 was 44,374,750 tons. It seems safe to estimate that 1944 production did not exceed that of 1943 and that there will be little change in 1945.

Slag Production

Blast-furnace slag, like crushed stone and sand and gravel, is used chiefly in construction and the production curve closely follows that of construction volume. This explains the drop in the total output



• The agricultural-limestone plant of the Swanton Lime Works, Swanton, Vermont, which has undergone extensive improvements.

• One of the pulverizers in the Swanton agstone plant.

of air-cooled screened and unscreened, water-granulated, and light-weight slag from 19,122,718 tons in 1942 to 16,507,606 tons in 1943, according to National Slag Association figures. This drop of 14 per cent. compares with the 47-per cent. drop in construction volume. On the basis of the estimated 40-percent. drop in construction volume in 1944 from 1943 it is estimated that the 1944 production of slag dropped off about 12 per cent. to about 14,500,000 tons.

It is interesting to note that in 1943 all of the various construction uses dropped off in varying degrees except airport runway construction which was up sharply along with agricultural slag and mineral wool. The same was probably true in a general way in 1944. There is no information on the output of light-weight slag aggregates in 1944 but it is undoubtedly above the 1943 volume of 76,971 tons because of the several new plants built during the year which have increased the productive capacity of the industry.

Non-Commercial Production of Crushed Stone and Sand and Gravel

The non-commercial production of sand and gravel and crushed stone (aggregates and ballast only) reached an apparent peak of about 152,000,000 tons in 1939 when many huge government construction projects were under way. Reports in earlier years were incomplete and even in the later years some information is lacking. It is, however, significant that this type of output fell off gradually until 1942, when it dropped from about 142,000,000 tons in 1941 to about 87,000,000 tons in 1942 and to about 70,000,000 tons in 1943. As most of the contractor and government-operated plants were then supplying materials for dams, army camps, air bases, and other large construction projects, most of which have since been completed or have suspended construction for the duration, it is probable that an even lower level was reached in 1944 and that 1945 will see a still further drop. The bulk of the output in these years was undoubtedly produced by contractors, states, counties, etc. for highway maintenance and construction.

Sand-and-Gravel Plant Developments

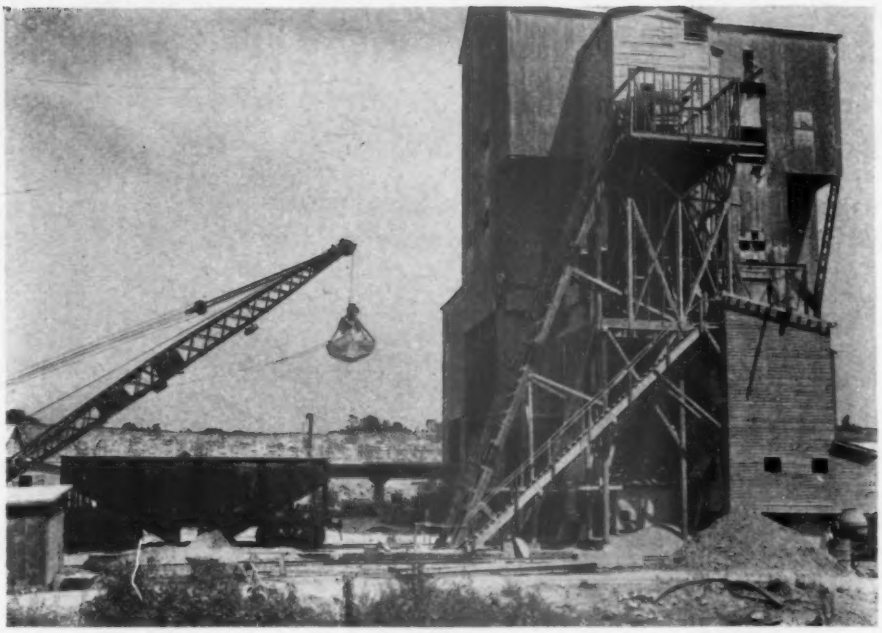
Only a few new sand and gravel plants were built during the year and those were small in size. It should be encouraging to commercial producers, however, to know that most of them were permanent plants operated by existing companies and that most of the plants which dropped out of production were portable or temporary operations which had supplied materials for the construction of war projects. The number of plants improved or enlarged in 1944 was also small compared to recent years. This condition has further swelled the already huge volume of pent-up demand for equipment by this industry when it is again available without restrictions.

• A general view of the de-sander in the Newtown, Ohio, pit of the Ohio Gravel Company in operation. Two-compartment loading bin in foreground.

• The long field conveyor which carries material from pit to plant of Ohio Gravel Company.

Among the new plants built were those of Parker Brothers and Company, Columbus, Texas; the Azusa Rock and Sand Company, Azusa, California; the Stony Creek Gravel Company, Noblesville, Indiana; Giannotti and Sershen, Ely, Minnesota; the Crosswick Sand and Gravel Company, Crosswick, New Jersey; the Consolidated Rock Products Company, Orange, California; the E. E. Bishop Company, Adin, California.

Important plant improvements were made by the Ohio Gravel Company, Newtown, Ohio; the Builders' Sand and Gravel Company, Indianapolis, Indiana; Bryan-Monroe, Inc., Raleigh, North Carolina; the Amer-



• General view of improved pulverizing plant of Columbia Quarry Company. Car is dumping into track hopper. Main crushing plant is in the background.

ican Aggregates Corporation, Indianapolis, Indiana.

Silica Sand The production of silica or industrial sand apparently remained at a high level in 1944 due to its use in many vital war industries. There was considerable activity in the construction of new plants and the improvement and expansion of existing plants. One of the best of the new plants was that of George F. Pettinos, Inc., at Manumuskin, New Jersey. The capacity of this plant is 600 tons daily, the same as that of the plant it replaced. A new $200,000 plant was built at Eugene, Oregon by Silica Products, Limited, to produce molding sand. The Silica Products Company completed its new plant at Guion, Arkansas which replaced the one destroyed by fire in 1943. The H. J. Markland Company built a $100,000 plant near Coleman, Texas for the production of glass and foundry sands. Extensive improvements were made by the Wedron Silica Company, Wedron, Illinois.

Crushed-Stone Plant Developments

The outstanding new crushed stone plant of 1944 was undoubtedly that of the Old Colony Crushed Stone Company which was fully described in the December, 1944, issue of PIT AND QUARRY. Except for minor changes this plant was substantially as it was built in 1926 when it was completely destroyed by fire on January 14, 1944. The blaze left undamaged only the seven crushers and a dust collector. Prompt action was taken to obtain the necessary priorities and equipment and the new plant went into full operation on September 16, just eight months after the fire. Also of interest is the fact that the seven original crushers and thirteen vibrating screens, the latter replacing the same number of older-type screens, are now producing 4,000 tons of crushed stone in a 9-hour day compared to 2,500 tons for the old plant. The better design of the new plant is given credit for most of this increase as two crushers and four screens were used only at rare intervals when certain products were made. In the new plant every unit has a job to do all the time. The more efficient screens and the replacement of bucket elevators by belt-conveyors also contributed.

Briefly the stone is carried from the 60- by 48-inch jaw primary crusher on a belt conveyor which goes through the plant bins to a scalping screen over the two 16-inch gyratory secondary crushers. A series of two conveyors carries the stone to a pair of scalping screens over the two 10-inch gyratory tertiary crushers. A return conveyor carries the product of these crushers back on the conveyor ahead of the screens. The minus-2¼-inch material through the bottom decks of these screens is carried on a conveyor to the screening building where there are two duplicate systems of five screens each over the two rows of storage bins. In each row a single 2-deck screen does the coarse separation; a belt-conveyor feeds the undersize to a pair of 2-deck screens which make the intermediate sizes; a second conveyor feeds the undersize to a pair of single-deck screens for final sizing. Allis-Chalmers crushers and screens and Barber-Greene belt-conveyors are used in this plant.

One of the most interesting developments was the rebuilding by the Liberty Limestone Corporation of its crushed stone plant at Buchanan, Virginia, which had been destroyed by fire. The rebuilt plant and the modern agstone departments at this location and at the company's Rock Hill plant were fully described in an article in the September, 1944, issue of PIT AND QUARRY. Of special interest to other producers is the system used for the protection of the larger motors and the important plant equipment.

Among those building new crushed stone plants in 1944 were: Blue Rock, Inc., Portland, Maine; the Greene Limestone Company, Greene, Iowa; the East St. Louis Stone Company, Pittsfield, Illinois.

Important improvements were made by the Columbia Quarry Company, Krause, Illinois, (see PIT AND QUARRY, December, 1944); the Alberene Stone Company, Schuyler, Virginia; the Concrete Materials & Construction Company, Cedar Rapids, Iowa; the Melvin Stone Company, Melvin, Ohio; the Quartzite Stone Company, Lincoln, Kansas.

Agricultural Limestone The growing demand for agricultural limestone created by the AAA farm program has been a boon to the crushed stone industry during this period of decline in other types of production. Recent AAA estimates indicate a total production in excess of 15,000,000 tons of agstone in 1944, a considerable increase over 1943, but still far below the demand. While many small plants were set up by new producers the bulk of this material came from the existing plants of established producers or from new plants erected by them.

One of the most interesting developments of the year was the adaptation to the production of agricultural limestone of many of the portable and temporary plants which had contributed so materially to the production of aggregates for the construction of important war plants during the 1941-43 building boom. Such a plant, built and operated by Frank M. Butler at Lee Center, Illinois, was described in the September, 1944, issue of PIT AND QUARRY.

(*Continued on page* 120)

Post-War Opportunities of Quarry Industry Controlled by Many Factors

The writer here frankly discusses the various aspects of the $10,000,000,000 construction program as envisioned by state and local governments; and by outlining some general trends he prepares the industry to meet situations in their own state capitals.

By BETHUNE JONES

another P&Q exclusive

POST-WAR operating costs and markets of the pit and quarry industries will be affected to a greater extent than ever before by the actions of state legislatures, which will be convened in regular session in some 45 states this year.

Besides being of greater significance, state legislation and regulation will tend increasingly to move in definite trends in response to common problems and pressures. What happens in one or more states will be important as an index to what may develop in others. Industries, even though local or regional in scope, will have to keep an eye on the general trends in order to be prepared to meet situations in their own state capitals.

The pit and quarry industries, of course, have had their eyes on the prospect that a huge program of highway construction and other public works will be turned loose through state and local as well as federal action. It has been estimated that state and local governments are contemplating a total of nearly $11,000,000,000 in post-war public construction of various types, although much of this planning is still in the idea stage.

Raising Government Funds Pleasing as this picture may be from the markets viewpoint, it is not without its darker side. Coming in for serious consideration this year for the first time will be the matter of where the funds are coming from for state and local governmental participation in public works on any such grand scale. State legislatures also will consider numerous other revenue pressures, including benefits to war veterans; demands by municipalities for a larger slice of state-collected taxes; unemployment relief for those who can not be absorbed in private employment or public works; higher old-age pensions and other broadened social legislation; better educational facilities; and other expanded services.

While the states have sharply reduced their bonded indebtedness and piled up very handsome surpluses during the war, their currently bright financial position may be rapidly reversed in the immediate post-war years if the indicated revenue demands are met in any substantial portion. With the war still in progress, it is likely that new and added revenue proposals will be sidetracked in most instances this year and there may even be some tax reductions. The general post-war outlook, however, points either to scrapping of many of the plans now being advanced or a higher level of state and municipal taxes.

Although the nonmetallic-mineral industries are less susceptible to special taxation than a number of other industrial and business fields, there may be some proposals for new or increased severance taxes directly affecting their operations. An indication of this was a proposal defeated in Arkansas at the November election which would have levied a severance tax on several natural resources, including building stone, gravel and sand, to contribute to the financing of a hospitalization program.

Under pressure of revenue demands the legislatures of some states may consider proposals for state-operated plants in competition with privately-operated plants. An example of such state action is provided by South Dakota, which operates, under the direction of a state cement commission, a state-owned cement plant at Rapid City valued at from $2,500,000 to $3,000,000.

As large truck-fleet operators the pit and quarry industries may be called upon to share in higher state gasoline and other automotive taxes resulting directly from measures to raise funds to match federal appropriations for post-war highway construction. Attempts also may be made to saddle on truck operators the blame and costs of the poor present condition of many roads and highways caused by inadequate maintenance due to war-time labor and materials shortages.

Diversion of Highway Funds Both the level of highway construction and the automotive taxes to support it will be directly affected by the progress of efforts to curb the practice of diverting highway funds to unrelated general uses. Although a proposed state constitutional amendment outlawing highway funds was rejected by Nebraska voters at the November election, a similar measure was overwhelmingly approved in the state of Washington. Maine approved such an amendment by a heavy majority in September.

The adoption of the Maine and Washington amendments brought to 16 the number of states now having state constitutional protection against the misuse of automotive-tax receipts. The others are Iowa, Oregon, West Virginia, Kansas, Missouri, California, Colorado, Idaho, Michigan, Minnesota, Nevada, New Hampshire, North Dakota and South Dakota.

Kentucky's electorate, as a result of 1944 legislative action, will vote this year on an anti-diversion amendment, while in Connecticut and Pennsylvania, similar amendments are halfway through state legislatures, with another legislative passage required this year before the measures can go to the voters. Movements are currently under way for the presentation of such amendments in the 1945 legislatures in many other states, with bright prospects for further progress.

Highway-fund diversion will be an issue in a number of states this year in other respects than the constitutional amendment movement. In Oklahoma, for example, Governor Robert S. Kerr recently said he would ask the legislature to transfer from $2,000,000 to $3,000,000 of anticipated surplus general funds to the state highway department for road construction, and to earmark for the highway fund the 1-cent state gasoline tax now going to the general fund.

Efforts may be made in many states to obtain legislation providing for the repayment of all or part of the amounts previously diverted to non-highway purposes. Washington highway users will ask their 1945 legislature to reimburse the state highway fund for the temporary diversion of $10,000,000 in 1933 for emergency relief. Indiana highway users will similarly urge legislative transfer of $13,000,000 from general funds to the state highway fund to compensate for past diversions.

With virtually every state treasury bulging with surplus general funds, it is probable that many other states will follow this trend for repayment of past diversions. Even in some states which have not resorted extensively to diversion, it is not unlikely that general funds may be used for post-war highway construction in recognition of the contribution of such projects toward easing the transition period and to avert automotive-tax increases which otherwise might be necessary.

Sales and Income Taxes Interest in the field of general state taxes will revolve around sales and income taxes. As long as treasury surpluses exist, there will be opposition to both forms of taxation. Income-tax repeal may be sought in a number of states this year, including Alabama, Iowa, Oklahoma, Minnesota and Idaho. A special session of the Kentucky Legislature was being sought at this writing to act on an income-tax repealer. Sales tax repeal movements may develop in many states, including Ohio, North Carolina, Utah, Iowa and others.

The long-range outlook, however, points to greater pressure for sales than income taxes, particularly if the federal government remains heavily in the income-tax field. It will be argued that the sales tax offers the greatest revenue potentialities and that it is less discouraging to new manufacturing industries, which will be competitively sought to provide employment opportunities. Experience has shown, however, that the sales tax is a particularly unacceptable tax to levy from the public viewpoint and such proposals are unlikely to spread to any great further extent as long as post-war revenue pressures remain on the horizon.

Likely to prove even more troublesome than state taxes will be new municipal revenue-raising measures which are being considered by an ever-growing list of cities. With cities of more than 10,000 population planning a total of some $4,500,000,000 of post-war capital improvements, with only a fraction of the money in sight, demands of municipalities for a greater slice of state-collected taxes and for authority to issue new levies of their own will continue to swell as the end of the war comes nearer.

A wide variety of new municipal levies will be sought, with a number of cities currently evidencing interest in Philadelphia's municipal income tax, which is levied at the rate of 1 per cent. on all "salaries, wages, commissions and other compensation," and on net incomes of all businesses and corporations. Sales taxes, such as are currently effective in New York City and New Orleans, also are being eyed by other municipalities. Business license fees are among other municipal revenue sources being considered for expansion and increases.

The prospect of a widespread and varied assortment of new municipal taxes is feared by business interests as carrying with it the threat of added business administrative as well as tax burdens, together with new and imposing barriers to the free flow of interstate and even intrastate trade. A new crop of local levies also would tend to push further away than ever the hope of obtaining the elimination of overlapping and conflicting taxation by the various levels of government.

Interstate Barriers Besides facing state and local tax trade barriers, business across state lines will continue to be confronted with state regulatory barriers. With many state trade barriers temporarily leveled under war-emergency measures, it has been hoped that the war-time demonstration of the need for unobstructed commerce might lead to permanent removal of such curbs. That these hopes may be premature, however, was indicated by the 1944 Kentucky Legislature's rejection of a bill permanently to liberalize that state's truck size and weight restrictions.

One of the nation's worst highway transportation bottlenecks, Kentucky's present law limits trucks to a gross load of 18,000 pounds and a length of 30 feet. A temporary war-time arrangement fixes the maximum load at 40,000 pounds and the length at 45 feet for specified highways. A bill to make these emergency limits permanent was defeated amid charges that the Kentucky Legislature was dominated by the Louisville & Nashville Railroad. It was further charged that the same railroad was responsible for the fact that Tennessee and Mississippi happen to have the next lowest load limits in the country — 30,000 pounds.

Bills permanently to remove state regulatory barriers will be issues in many of this year's state legislative sessions. If other states follow Kentucky's example, there will be increased pressure for federal regulation of motor-vehicle sizes and weights, together with broader federal regulatory action in other fields, as a means of effecting uniformity. Larger federal appropriations for highway construction will provide a basis for greater federal interest in keeping the highways free of unreasonable restrictions.

Labor Relations The future course of state legislation in the labor-relations field will be determined by such currently unsettled factors as public opinion, federal action and court rulings on present state laws. If the War Labor Board is abolished and not succeeded by some similar federal agency, there will be intensified pressure for the creation of state boards to help untangle labor-management disputes in states where such agencies do not already exist. An offsetting factor may be further growth of sentiment in both labor and management to keep government out of labor relations.

State constitutional amendments outlawing the closed shop were adopted at the November election in Florida and Arkansas, but rejected in California. The two adopted measures will be attacked in the courts by labor organizations, adding to a list of previously-enacted state laws restricting labor-union activities which already are in litigation.

Of possible significance is the fact that the closed-shop proposal lost in the more heavily industrialized California, although getting by in Florida and Arkansas with their less potent labor-union vote. This situation has been reflected generally in past state legislation stringently curbing union activities. It does not appear likely at this point that the larger industrial states will turn to such legislation, although it is likely to be proposed on a broad scale this year. Meanwhile, the question of just how far the states can go in attempting to restrict unions, without conflicting with the federal constitution and federal laws, awaits determination by the United States Supreme Court.

An attempt will be made this year to revive the drive for state dupli-

cates of the federal wage-hour law, but there are no present indications such measures will be widely enacted, if at all. The states heretofore have strongly resisted Washington pressure in this direction, with some states even taking directly opposite action by reducing the time limitations for the filing of worker suits under the federal statute.

Social Security A trend toward broadened social security and related measures may result in added employer burdens. Many states this year will consider bills to liberalize unemployment-compensation laws through increased benefit payments, longer benefit periods and extension to cover the employees of smaller employers heretofore exempt. Although such a trend has been in progress ever since the inception of unemployment compensation, there have been a number of developments which will speed the movement during the 1945 sessions.

State legislators will recall the prominence gained in the Congress during the past year by bills proposing to supersede the present state systems by a national system paying benefits on a uniform basis. Despite the fact that these proposals were rejected by Congress, they will be cited as indicative of a need for liberalization of the state laws to offset pressure for federalization of the program. While the House in Washington voted to leave jobless compensation entirely in the hands of the states, the House Committee on Post-War Economic Policy significantly urged that the states increase rates and lengthen coverage periods.

Liberalization of the state laws has been advocated by leaders of both major political parties in many states, as well as nationally. Labor, of course, has long been calling for such action. And, a recently-announced survey by the U. S. Chamber of Commerce indicated that a majority of the business elements it represents see need for liberalizing unemployment compensation.

Workmen's Compensation Many state legislatures this year also will consider bills to liberalize state workmen's compensation laws, as to payments, compensable diseases and the number of employers and employees affected. This, too, will be in keeping with a trend which has made steady progress in recent years. More than half of the 1943 legislatures considered such measures and they were issues in a number of the comparatively few regular state legislative sessions held in 1944.

Hospital Care Business costs also may be increased by measures to broaden the accessibility of medical and hospital facilities which will be considered on a broad scale in 1945 legislatures. Some of these proposals will be of a revolutionary character designed to protect workers through state-sponsored hospitalization insurance programs, supported either wholly or partially by employer contributions. An expansion of state hospital and health facilities along conventional lines also will be sought in many states, with such proposals possibly leading to new or added taxes in some instances.

That business interests are becoming aware of this trend was indicated by a recent U. S. Chamber of Commerce referendum through which its members asserted that "employers who have not done so should explore the possibility of providing for their employees some protection against non-industrial or non-occupational disabilities and sickness." By a vote of 1,592 to 700, the chamber members further declared that "if, after a reasonable period of time, the private effort of employers to provide protection against non-industrial and non-occupational disabilities and sickness will leave substantial gaps in coverage, only then should public action be taken." If such action is taken, a majority of the members added, "this should be at the state and local levels of government rather than at the federal level" and "should permit voluntary group plans to operate as alternatives to government plans."

A report was awaited at this writing from a special commission in Rhode Island which has been studying a proposed state compulsory hospitalization insurance law, first suggested by Governor J. Howard McGrath in his message to the 1944 Rhode Island Legislature and expected to be a legislative issue there this year. Rhode Island already has pioneered in the field of state-sponsored health insurance through the enactment in 1942 of a cash sickness-insurance law, the first of its kind in the nation. Financed by employee contributions, it is intended to give workers absent through illness compensation for loss of wages.

As first outlined in January, 1944, by Governor McGrath, employers and employees would make contributions under the proposed compulsory hospitalization insurance program to a fund. The governor said at that time he believed hospital services could be had by a contributor and his family dependents "for perhaps less than 5 cents per employed person per day." Because of the legal problem of devising a plan that would protect a worker's dependents, as well as himself, Governor McGrath subsequently suggested that it might be a good idea to have employers pay for the participation of their employees, with the employees paying for any members of their families they desired to enroll voluntarily.

Similar proposals will be advanced in other states, although it is unlikely that many will get as deeply into the subject as indicated in Rhode Island without considerable further study. As has been the case in Rhode Island, measures to compensate workers for wages lost through sickness probably will precede attempts to cover sickness and hospital costs as well.

Private Construction Among other subjects likely to come up in state legislatures this year will be measures designed to stimulate private housing and other construction. In a significant step to encourage private capital to embark on large-scale housing projects, New Jersey's 1944 Legislature empowered municipalities to contract with development companies to reclaim blighted areas. Municipalities, under the new statute, can condemn any land within a projected site and sell it at cost to a development company. As an added incentive to risk capital municipalities also can freeze existing assessments up to 25 years. Similar legislative steps had previously been taken in New York, Missouri, Michigan and Illinois. Maryland moved in the same direction through the adoption of a new state constitutional amendment at the recent election. Such measures are expected to be brought up in other states this year.

Building Codes Also bearing upon post-war building prospects and the attendant materials market is a trend toward modernization and standardization of building codes and related regulations which has been under way in many states and cities. Indiana last year adopted a new state building code. Preparation of a new basic state building code has been under way in Connecticut, with such action previously taken in Ohio and Wisconsin.

Drop in Cement Shipments Checked Sharply in Last Months of 1944

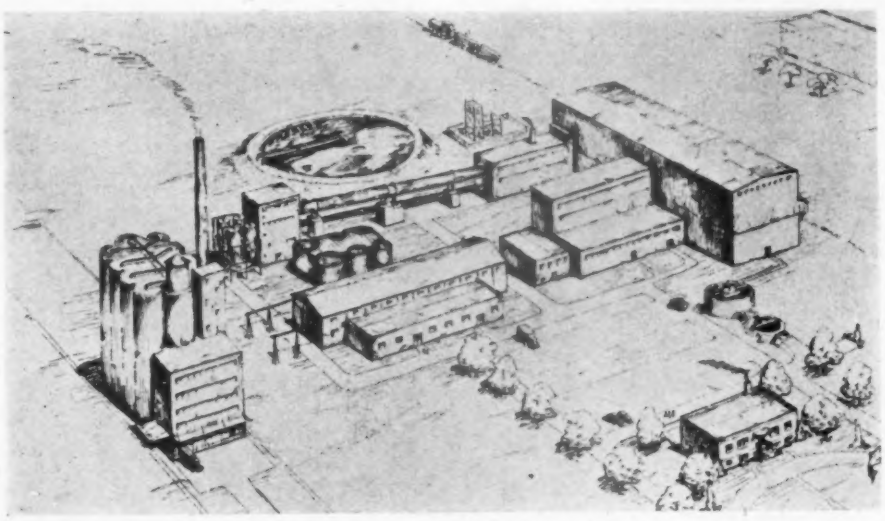
Production and Shipments

THE cement industry, having contributed its share to the war effort by providing the cement for our vast war construction program, is now devoting most of its efforts to post-war planning. It is, of course, still supplying what would ordinarily be considered large quantities of cement for the construction of hospitals and other structures and for the constant expansion and conversion of war plants, training centers, etc., made necessary by the constantly-shifting requirements of this global war. It is also contributing materially in the production of other vital materials such as lime, nodulized flue dust, beneficiated iron ore, phosphate concentrates, etc. The demand for most of this emergency production, which has been thoroughly covered in numerous articles in these pages, has passed its peak and some of these plants have already been reconverted to resume the production of cement. There has been no indication that any of these plants will continue the production of these materials after the emergency is over.

This post-war planning, of course, embraces cement plant improvements and expansions, new and improved types of cements, new uses for cement, distribution methods and facilities and most of the many other aspects of the cement business. In the past year it has become increasingly evident that, as soon as the equipment and labor shortages are over, the cement industry will spend more money on plants than ever before in its history. A few established companies have already publicly announced their plans which include not only new plants but also the virtual rebuilding of existing plants. Many others, some of them planning even more extensive programs, have not yet made their plans public. Apparently there is hardly a plant which will not undergo major changes.

The volume of such work planned seems to grow as reports pour in about the huge volume of planned post-war construction which is beginning to assume almost astronomical proportions. Actually, however, most of this work is based on something much more tangible. After the depression, during which many plants reached an all-time low from a mechanical standpoint, the industry had just gotten its plant-improvement program well under way when we entered the war. The ensuing period, during which little new equipment was available and production reached an all-time high, further depreciated many plants which had not yet been brought back to their pre-depression standards of mechanical efficiency. It is these deferred expenditures, multiplied by still further deferment, which provide a sound base for the post-war program of the industry. Other factors entering in include the development since the depression of improved methods and equipment, ranging from individual machinery units to revolutionary processing methods. Such developments have been and will continue to be responsible for expenditures ranging from the replacement of existing machinery units to the rebuilding of entire plant departments and the construction of complete new plants. Advancements in cement technology, tightening cement specifications, depletion of deposits, etc., will undoubtedly also have their effect.

A healthy condition has been created in the industry by the rapid expansion of the cement industry during the war years in Mexico and Central and South America. Not only have these countries purchased the equipment from several obsolete plants but they have also drained from operating plants, used equipment dealers, and even junk yards, old equipment which might conceivably have been put back into operation again in spite of its inefficiency.



• Artist's sketch of Missouri Portland Cement Company's proposed plant to be built at Memphis.

Production and Shipments

The Year 1943 The final figures on cement production and shipments in 1944 will not be available for some time but it seems evident that shipments were about 95,000,000 barrels, about 25 per cent. below the 1943 total of 127,567,000 barrels. Production was about 91,000,000 barrels, about 32 per cent. below the 1943 total of 133,483,000 barrels. These figures, while low in comparison with the 1942 peak, are still far above the depression low in 1933 when shipments were 64,086,000 and production was 63,473,000 barrels. It is also interesting to note that the downward trend was checked a few months ago and that shipments from August through December, 1944 were considerably ahead of the like period in 1943. An unexpected spurt in shipments beginning in August resulted in a sharp drop in stocks at the mills to the lowest level since October 1942 when plants were straining to meet the demands. Bringing the stocks back near a normal level will help to swell the 1945 production figures. This jump in

shipments can probably be attributed partly to the fact that August and September are usually the two best months for farm construction in most areas. The recent expansion of certain types of war plants to meet the changing needs of our armed forces has also been a factor. Another reason was that the consumption in some areas in 1943 was far below the level of the nation in general and that this condition was improved in 1944.

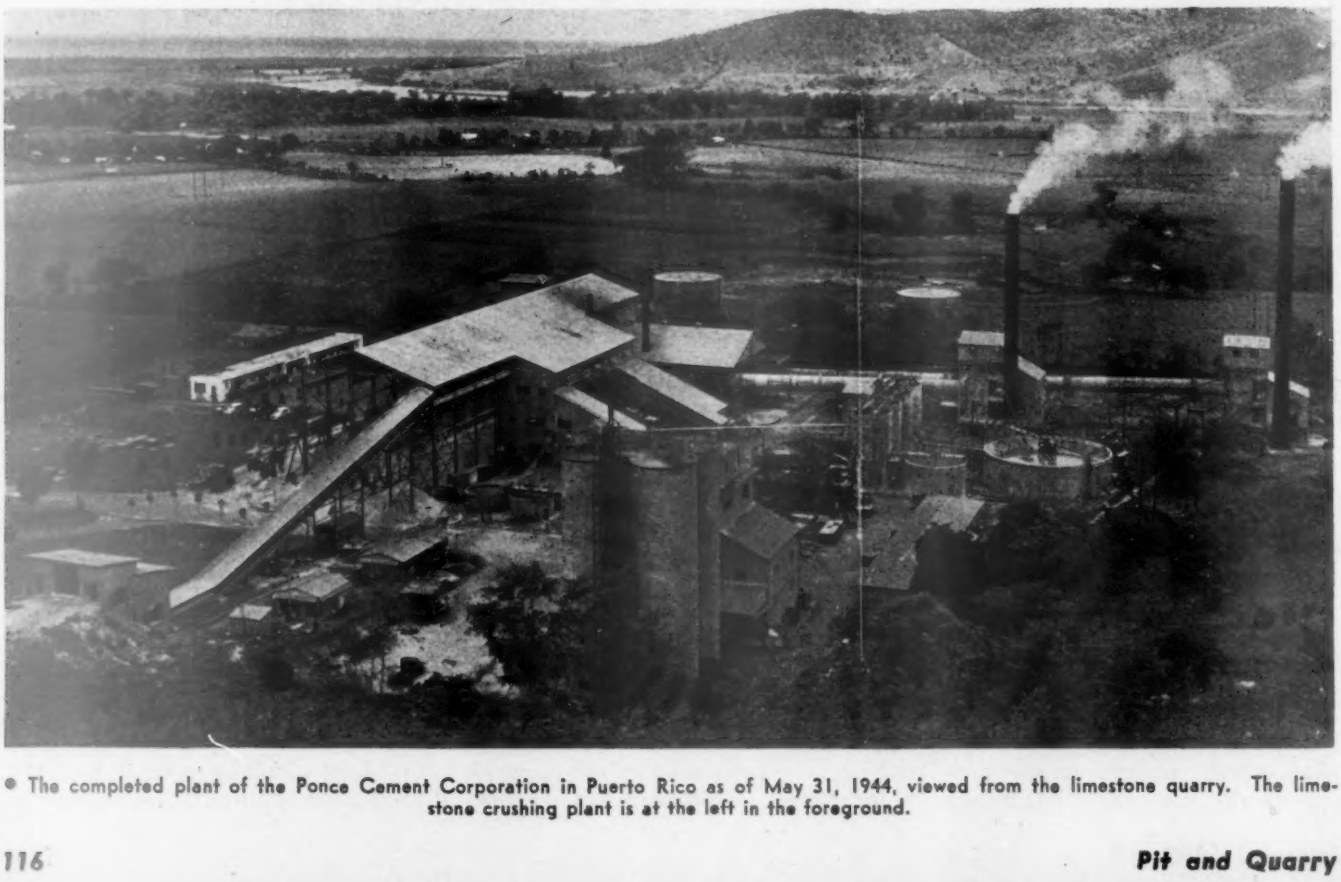
Future Prospects There is no evidence as yet that there will be any important change in the consumption of cement in the near future, but there is some room for optimism in the recent prediction made by the WPB Building Materials Division that, if present construction restrictions remain unchanged, 1945 consumption will be from 50 to 60 per cent. of capacity. This would mean from 107,000,000 to 129,000,000 barrels of cement, using the Division's figures of 215,000,000 barrels for the capacity of the industry. It would compare with the 88,000,000 barrel consumption total estimated by the Division for 1944, or 41 per cent. of capacity. As these estimates are based almost entirely on heavy construction and do not take into consideration the upswing in farm and repair and maintenance construction they are probably on the conservative side.

On the basis of known facts the industry may confidently look forward to a sharp upturn in business as soon as the progress of the war permits. When that will be is still anybody's guess but the flood of information on post-war construction projects shows no sign of slowing down. Detailed information on the post-war construction plans of most of the cities, towns and villages of over 50,000 population and lumped information on smaller municipalities is presented elsewhere in this issue in an attempt to give at least a partial picture of the tremendous assured post-war market for construction materials. Similar information on the construction plans of the various states was presented in the January, 1944, issue of PIT AND QUARRY and these figures have swelled tremendously since. The total anticipated post-war construction in the 37 eastern states as compiled by the F. W. Dodge Corporation up to October 31, 1944, is over $17,000,000,000. Since then many additional programs and projects have been announced, one of which—the rivers and harbors bill recently signed by the President—alone calls for the expenditure of $1,000,000,000. When the 11 western states are added in it seems safe to say that the total to date for the entire country exceeds 25 billions of dollars. This alone is enough to keep the construction level at the 1942 all-time peak for 2 years or at the 1940 level for 4 years.

• High-pressure viscosimeter for testing oil-well cement in the Universal Atlas laboratories.

Changes in Production Facilities

Compared to 1943, when two plants were withdrawn from production and one large new plant went into full-scale production, there was little change in the capacity of the industry. No new plants were built and no important plant expansions were made. On the other hand only one plant was withdrawn from production and a few others made changes which improved efficiency but decreased capacity. The plant withdrawn from production was that of the Yosemite Portland

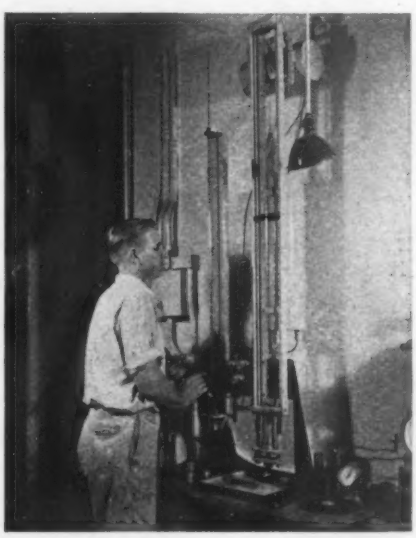


• The completed plant of the Ponce Cement Corporation in Puerto Rico as of May 31, 1944, viewed from the limestone quarry. The limestone crushing plant is at the left in the foreground.

Cement Company, Merced, California, which was recently sold to the Henry J. Kaiser Company. It was announced that only the storage and packing departments will be retained for distribution purposes and that the equipment would be sold to a cement producer in Venezuela.

The Lawrence Portland Cement Company has near completion at its Thomaston, Maine plant a program which will decrease its capacity from 1,200,000 to 900,000 barrels annually but which will considerably improve its efficiency and economy of operation. The two original 11- by 200-foot kilns have been combined to form one 11- by 362-foot kiln. A new Fuller air-quenching clinker cooler has been installed and a new coal mill building was erected.

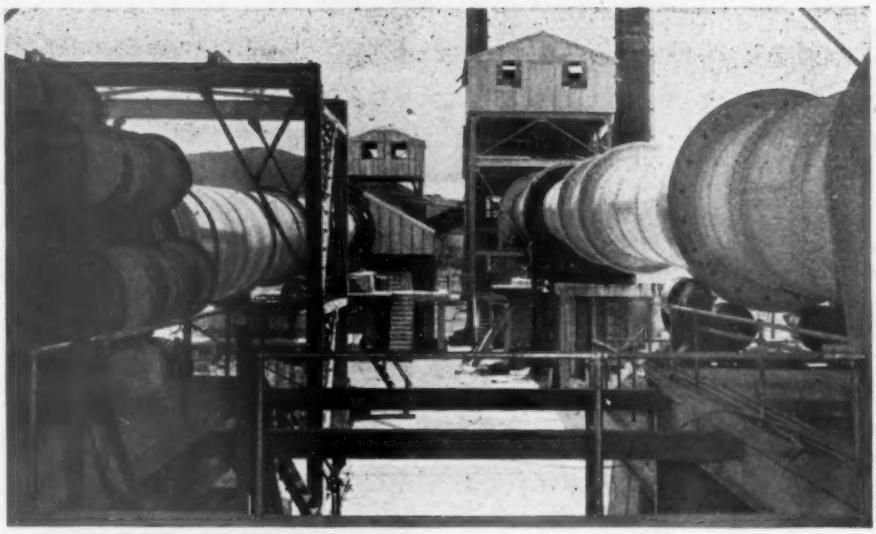
Minor improvements were made in a number of plants. Among these was the Pacific Portland Cement Company's plant at Gold Hill, Oregon, where a new power plant is near completion. Power will also be supplied for Gold Hill street lighting and other municipal purposes.



• Boehler air surface meter and fluid permeability apparatus in Universal Atlas' concrete laboratory.

Other plants improved included the Quincy, Michigan plant of the Wolverine Portland Cement Company and the Medusa Portland Cement Company's distributing plant at Holland, Michigan.

Planned Expansions Few of the many new plants and important plant improvement programs planned for the post-war era have been publicly announced but there is hardly a plant or company that will not be affected. Typical of these was the announcement that the Missouri Portland Cement Company would build a new 750,000-barrel wet-process plant at Memphis where it has for many years operated a distributing plant and a sand-and-gravel plant. Construction will begin as soon as WPB regulations permit and the plant is expected to be in operation in time to serve the immediate post-war market which officials of the company believe will be very active. The limestone for this plant will be quarried near Batesville, Arkansas.



• The new 330-foot kiln on the left and the 180-foot kiln at the right in the enlarged plant of the Ponce Cement Corporation in Puerto Rico.

Hawaii Little information has been released on the cement situation in Hawaii and other Pacific outposts but it is known that the Permanente Cement Company's bulk cement distributing plant there has handled more than 3,000,000 barrels of cement in less than three years. The cement is shipped from California in bulk. It can also be safely presumed that the Hawaiian Cement Company's plant at Waianae, on which construction was begun late in 1943, is now in operation.

Puerto Rico In Puerto Rico, where the one existing plant was unable to meet the growing demand in the Caribbean area, the Ponce Cement Corporation, which late in 1942 began production at its new 1,000-barrel wet-process plant at Ponce, was forced to enlarge the plant. This program, completed May 31, 1944, increased the capacity to 2,500 barrels daily, the ultimate capacity for which the plant had been designed. The new equipment added consisted of an 8-foot 2-inch and 9-foot 2-inch by 324-foot Unax kiln, a new finish-grinding mill and air separator, and other smaller units. A complete description of these operations was published in the August, 1944, issue of PIT AND QUARRY.

Relaxation of Restrictions

An important development, but one which will probably not have much immediate effect on the industry was the revocation on November 25, 1944 of WPB Limitation Order L-179. This order, which was issued in August, 1942, limited the manufacture of cement to the three specified types most commonly used and was designed to increase the production of cement at a time when the war-construction demands exceeded

• Conduction calorimeter in Universal Atlas' concrete laboratory for determining rate of heat liberation of Portland-cement pastes.

the capacity of the industry in some areas. There is no doubt that the desired results were obtained as the total 1942 consumption of cement, over 185,000,000 barrels, the highest consumption figure on record, approached the 215,000,000-barrel per year figure regarded by the WPB Building Materials Division as the capacity of the industry. The demand in some areas of intense con-

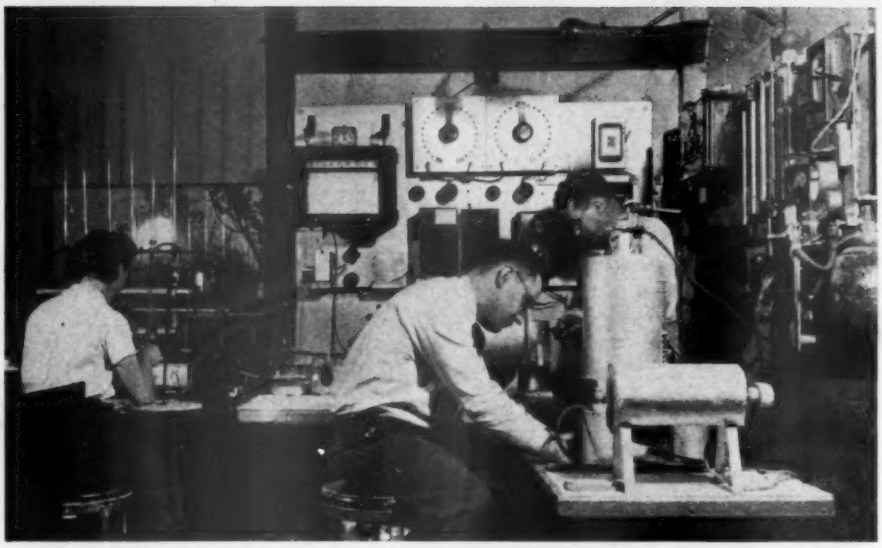
struction activity was so great that cement was in some cases shipped more than 1,000 miles from plants in less active areas. These restrictions admittedly worked some hardships as well as benefits to the cement industry. Many manufacturers were temporarily prevented from marketing specialties for which they had developed profitable markets, while others enjoyed the temporary advantage of not having to meet too great a number of specifications.

According to the WPB the order was revoked because there is no longer any justification for such restrictions and the present time was considered most opportune because of the present low level of the stocks in manufacturer's hands. Its revocation is not expected to affect the overall need for manpower over any period of time as the volume of cement required during 1945 will depend on developments of the war; minor relaxations already made have been of little importance to the industry. It will, however, make it possible for producers to begin to anticipate the future demands for other types of cement than those now in stock.

Other provisions of the order, subsequently removed, had prohibited the earmarking of storage bins for individual customers in order to promote full utilization of all available storage space.

Air-Entraining Cement

One of the phenomena of recent years was the rapid acceptance given the various types of air-entraining cements. Seldom has any new product won such a large following in such a short time. During 1944, however, much of the confusion existing early in 1943 has been cleared up and there is a much better general understanding of its limitations and its possibilities. There now remain few extremists who either herald it as a cure-all or condemn it absolutely. The general attitude now seems to be that air-entraining cement is in a transition period but that it has a definite place and every effort is being made to learn more about the product, its characteristics, advantages and disadvantages. There seems to be ample justification for the belief that this cement will alleviate some of the problems which have plagued the industry in the past.

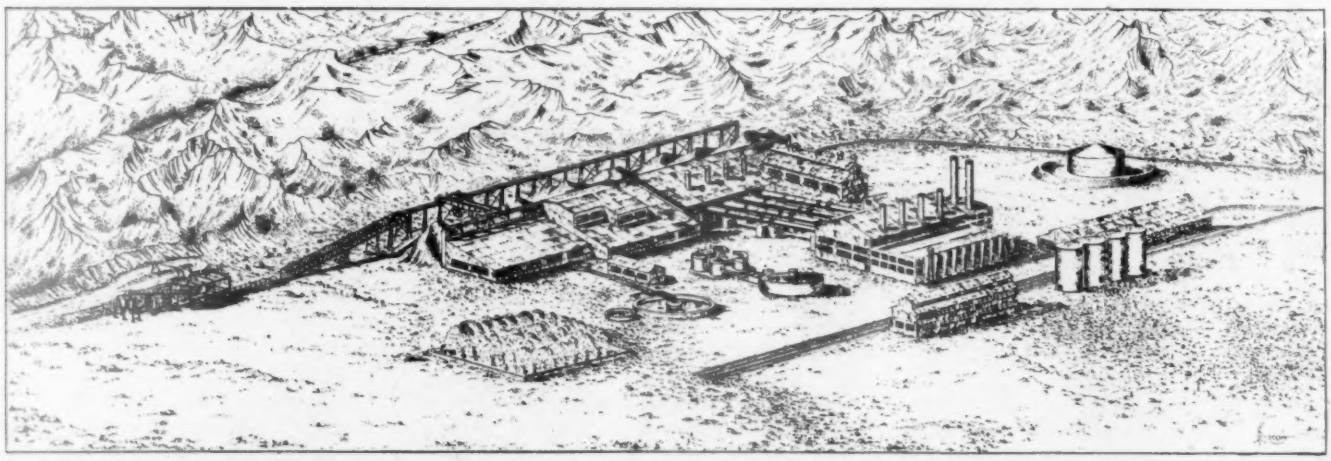


• High-temperature furnaces and control panels in Universal Atlas' petrographic section.

• Compressive-strength-testing machine with auxiliary dial in concrete laboratory.

Apparently the manufacture and use of air-entraining cements will involve no particular difficulties or complications once the slightly different technique necessary is established and definitely understood. In its manufacture and use this new product seems to be going through a transition period similar to the one from which high-early-strength cement finally emerged as a permanent and valuable new construction material. There seems ample justification for the belief that proper control in manufacturing this cement has eliminated most of the difficulties which have been encountered in its use and that more progress will be made in this direction.

In the past year air-entraining cement has increased its standing in the ready-mixed concrete industry, where it found such wide acceptance in 1943. The concrete-products industry, which had been skeptical of the advantages of this cement for its products has in the past year started



• Pen-and-ink sketch of the plant erected in Chile last year. Community to house workers will be located in hills in background.

using it on a rapidly increasing scale. This growing acceptance has apparently been due more to advantages in manufacturing than to the physical improvement of the product. The use of air-entraining cement gives the concrete greater workability and results in fewer wet cracks, culls and discards. The fact that it also imparts to the product some resistance to moisture penetration, freezing and thawing," etc., seems to be of secondary importance at this stage. Some idea of the wide range of possibilities for this cement may be gathered from the fact that it has already been used with some success as a straight-cement mortar because of its high plasticity.

Laboratories

What some companies are doing to promote the use of cement, to

• New laboratory and office building of the Canada Cement Company at Port Colborne, Ontario.

improve present types, and to anticipate future demands may be visualized by referring to an article in the July, 1944, issue of PIT AND QUARRY, which described the main research laboratories of the Universal Atlas Cement Company at Buffington, Indiana. The research activities are largely directed to the application of available basic information to current problems, to the improvement of present products and to the development of new products. In this application it is generally necessary to obtain further specific information and a considerable portion of the work of the staff is devoted to developing this new knowledge. As with all industrial laboratories, more or less service work is carried on for the different departments and plants of the company, and this too requires research, often in considerable amount.

The laboratories are composed of seven inter-connected sections or groups known as the Analytical, Petrographic, Concrete, Cement-Products, Oil-Well-Cement, and Refractories laboratories, and the Experimental Plant. Each of these groups actually encompasses more work than its name implies. In the Petrographic Section, for example, the work centers around the use of the petrographic microscopes, but it also includes the direct microscopic examination of various materials and performs many other functions. In the Analytical Section much analytical data is prepared for the investigations of the other sections, new developments in analytical research are examined for their application to cement studies, co-operative investigations are carried on with other agencies in developing and testing proposed specification methods, etc.

In addition to the usual equipment used in chemical and physical laboratories there are such items as: combustion, tubular, muffle, load-test, spalling-test and melting-point furnaces; centrifuges; constant-temperature cabinets, baths and rooms; moist, steam and curing cabinets; deep-freeze units; 4- by 35-foot and 6-inch by 8¼-foot rotary kilns and a smaller rotary calciner; jaw crusher, ball mills, a 3- by 8-foot tube mill, driers, etc., a 230-ton capacity hydraulic press, compression and tensile-testing machines;

• New laboratory and office building of the Canada Cement Company at Hull, Quebec. P. C. A. safety trophy at right is for a remarkable safety record.

• New silos and packhouse at Port Colborne plant.

temperature and pressure viscosimeters; various types of turbidimeters and air-permeability instruments including one of original design; air separators, sonometers, photometers, petrographic stages, microscopes, cameras, refractometers, calorimeters, balancers, cutting and polishing equipment, etc.

Foreign Developments

Mexico Much has been said in these pages in recent years about the rapid expansion of the cement industry in Mexico. Up to 1938 none of the six cement plants then in existence was called upon to operate at anywhere near its capacity. In 1939 the demand began to increase and the war brought rapidly-increasing demands which have resulted in an unprecedented new-plant and plant-improvement program. Of the eight plants in operation in 1942, six have since been enlarged and eight new plants have either been completed or will be in operation in a few months. As a result the output of cement (in metric tons of 2,200 pounds) jumped from 560,405 tons in 1942 to 1,081,700 tons in 1944 and a 1945 production of 1,430,800 tons is predicted.

The new plants include those of Cementos La Cruz Azul at Lagunas, Oaxaca; Cementos Mexicanos, S. A., at Monterrey, Nuevo Leon; Cementos Veracruz, S. A., at Orizaba, Vera Cruz; Cementos Guadalajara, S. A. (1943) at Guadalajara, Jalisco; Cementos del Pacifico at Mazatlan, Sinaloa; Impulsora de Cementos, S. A., Leon, Guanajuato. Plans are already being made for the expansion of some of these plants.

Among the existing plants which have been or are being expanded are those of Cementos de Mixcoac, S. A., San Pedro de Los Pinos, Mexico; Cementos Atoyac, S. A., Puebla,

Puebla; Cementos Mexicanos, S. A., at Hidalgo, Nuevo Leon; Compania Mexicano de Cemento Portland Apasco, S. A., Apasco, Mexico; Cia De Cemento Portland La Tolteca, S. A., Tolteca, Hidalgo.

The Guadalajara plant at Guadalajara, state of Jalisco was the first completed, in June, 1943. Like most of the others it secured most of its equipment from the United States. Two of the three kilns and several mills were obtained from the long-abandoned plant of the Castalia Portland Cement Company, Castalia, Ohio, and other equipment came from similar sources. The capacity of this new dry-process plant is rated at about 200 metric tons daily. It was completely described in the July, 1944, issue of PIT AND QUARRY.

Good progress is reported being made on the new plant of Cementos del Pacifico at Marmol, near Mazatlan, Sinaloa. This 900-barrel dry-process plant will have an 8- by 150-foot kiln and will generate its own power with Diesel engines. Most of the equipment for this plant came from the plants of the Aetna Portland Cement Company at Fenton, Michigan, and the Green Bag Cement Company, Kenova, West Virginia.

Cementos Veracruz, S. A., a combination of the Marquette Cement Manufacturing Company and Cementos Atoyac, S. A., has near completion a 2-kiln, dry-process plant at Orizaba in the state of Vera Cruz on the east coast of Mexico. Most of the equipment for this plant was taken from the old Hawkeye plant at Des Moines which Marquette replaced with a new plant in 1943.

The new plant of Cementos Mexicanos at Monterrey, Nuevo Leon has two 9- by 120-foot kilns.

An interesting development now well under way is the construction of a blast-furnace-slag Portland cement plant at Monterrey, Nuevo Leon by Cementos del Norte, S. A., a newly-formed subsidiary of Cementos Mexicanos, S. A. This new plant will dry a granulated wet blast-furnace slag from a local steel mill, blend it with gypsum and Portland cement clinker from the parent plant, and grind, store and pack the product. A capacity of 400 tons daily is expected.

South America South and Central American countries have also expanded their output of cement materially in recent years through the construction of new plants and the expansion of those already in operation. One of the new plants already in operation is that of the Corporacion de Fomento de la Produccion at Juan Soldado, near Coquimbo, Chile which will supplement the output of Chile's only other plant. A capacity of about 250,000 tons annually is expected. Much of the equipment for this plant came from the old Edison plant at Piscataway, N. J., which had lain idle for some years. The eight original 8- by 125-foot Edison rotary kilns were reconditioned and converted into four 9½- by 8- by 199-foot kilns. New equipment released to complete this plant included a flotation plant, ball mill, traveling crane, coolers, etc.

The Fabrica Nacional de Cemento in Guatemala has a 7- by 100-foot rotary kiln with a 5- by 50-foot rotary cooler which produce about 450 barrels of cement daily. The installation of a 6- and 7- by 180-foot kiln and a 6- by 50-foot cooler is just being completed and these will produce about 600 barrels of cement daily. The original kiln and cooler will then be used for lime manufacture with an expected capacity of about 40 tons daily.

Canada The Canada Cement Company, Ltd., which operates six of the nine cement plants in that country and five distributing plants, plans to continue the program of improvement which was begun about 15 years ago and has since continued almost without interruption. This program has brought all these plants up to the best modern practices in most of their departments and has included the conversion of five of them from the dry to the wet process. The sixth such conversion is under way and will be completed after the war. A series of articles in PIT AND QUARRY during this period has described most of these improvements in detail.

In the last few years efforts have been concentrated on the improvement of the five distributing plants and the construction of new packhouses, silos and office buildings at several of the producing plants and on the installation of dust collectors. One such job remains to be completed. Post-war work will include the improvement of the clinker-grinding departments in several plants.

War Damage to Foreign Plants

Little information on this subject is available but it can be safely assumed that the cement plants in enemy and enemy-occupied countries have suffered heavy damage from bombing as they are considered to be targets of the highest importance. When it is realized that Germany, Italy, Japan, France, China, Czechoslovakia, Finland, Austria, Greece, Hungary, Belgium, Denmark, Holland, Norway, Poland, Jugoslavia, Bulgaria, Rumania, Russia, etc. before the war operated cement plants with a combined capacity of over 100,000,000 metric tons annually it is evident that the post-war demands for equipment merely to replace or rehabilitate these plants will be tremendous.

Aggregate *(from page 111)*

One of the largest producers of agstone in the country, the Columbia Quarry Company, further increased its output of this material by expanding this department of its plant at Krause, Illinois. There developments, which were fully described in the November, 1944, issue of PIT AND QUARRY, consisted of the enlargement of a pulverizing plant originally built in 1926. A third pulverizer and considerable other equipment was added. The total capacity of pulverized limestone at this location is now 3,200 tons daily, including 800 tons of incidental production from the crushed stone plant.

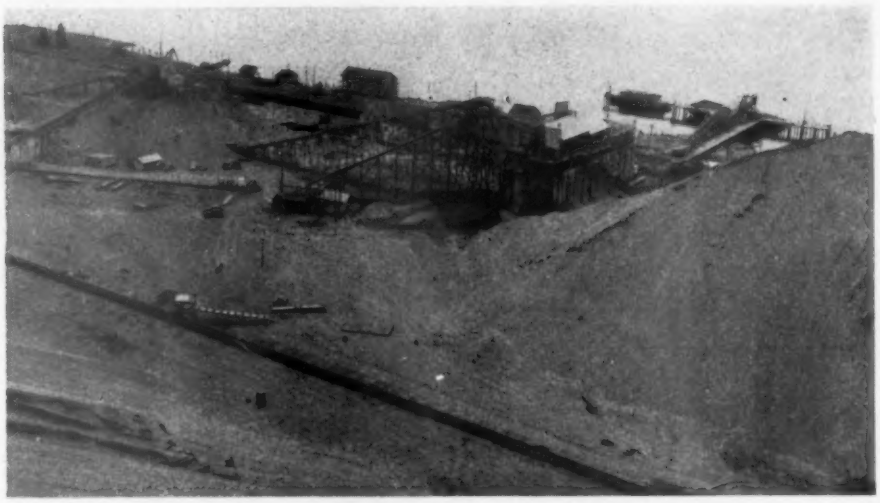
Among those building new agricultural-limestone plants in 1944 were the Sullivan Lime Company, Rogue River, Oregon; Earl Minton, Parsons, Kansas; C. B. Cullor, Unionville, Missouri; the Batesville White Lime Company, Batesville, Arkansas (see PIT AND QUARRY, December, 1944); the Mississippi Lime Plant Board, Brandon, Mississippi; the Louisiana Limestone Company, New Friendship, Louisiana (see PIT AND QUARRY, May, 1944); the Neuheisel Lime and Stone Company, Durand, Wisconsin; the Annville Stone Company, Hershey, Pennsylvania.

Among those making important improvements to agstone plants were: The McMillan Mining and Quarry Company, Roche Harbor, Washington; the Hopkinsville Stone Company, Hopkinsville, Kentucky; C. A. Langford, Gallatin, Tennessee (see PIT AND QUARRY, June, 1944); the Willingham-Little Stone Company, Whitestone, Georgia; Leonard Fry, Dickey's Station, Pennsylvania; Garnett Rock Company, Garnett, Kansas.

Puget Sound Plant is Altered to Keep Up With Changing Conditions

West Coast Company Whose Sand and Gravel Deposit Is One of Best and Most Extensive Known Has Recently Completed a Four Year Plan of Alteration.

By W. E. TRAUFFER



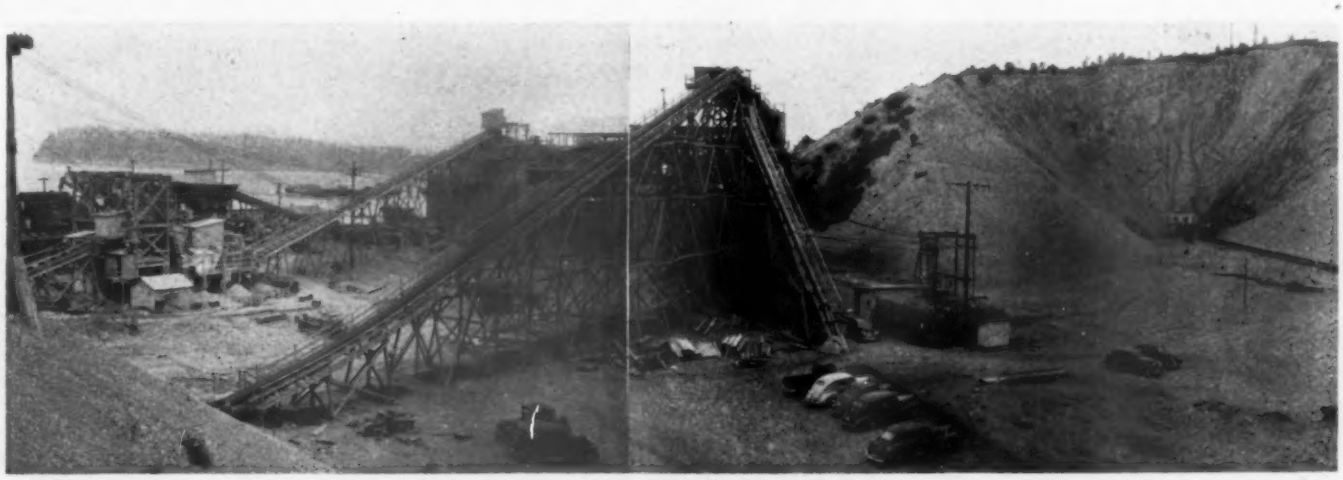
• View from top of 240-foot gravel bank showing part of pit conveyor system, raw material stockpile, crushing building and plant. Barge-loading dock on Puget Sound in background.

another ON THE SPOT report

THE sand and gravel deposit and plant of the Pioneer Sand & Gravel Company on Puget Sound near Steilacoom, Washington, have been described periodically in these pages since 1910 when the company was incorporated and began operating there. This recurring publicity has been given these operations not only because the deposit is one of the largest and best known to the writer but also because of the company's policy of altering the plant to meet changing conditions and of adopting the latest improved methods and equipment. The last article, published in the February, 1938, issue of PIT AND QUARRY, described the new plant which had replaced an older one because of the growing need for greater capacity, more accurate sizing, and lower production cost.

At the time this plant was built railroad ballast was the major product and the tremendous wartime demand for concrete aggregates had not yet begun. When this demand became apparent early in 1940 steps were taken at once to adapt the plant to it. Because of wartime shortages this program was carried out piecemeal and has just been completed. The eight shaker screens in the plant were replaced with modern vibrating screens of larger size and capacity, new bins were added and other changes were made. The addition of a second crusher and a screen and other changes in the crushed-gravel department increased the capacity of this department from 20 up to 50 cubic yards per hour. Digging in the pit had been carried on in an easterly direction to meet the earlier demands. By working in a northerly direction a section of the deposit was tapped which yields a higher percentage of better-graded gravel to meet the present needs. The use of separate raw material and coarse-gravel stock piles makes it possible to operate the pit, and the uncrushed- and crushed-gravel screening departments either together or separately as conditions may require. The loading conveyor system is so designed that barges can be loaded at the rate of 500 cubic yards per hour, or railroad cars at the rate of 200 cubic yards per hour, either together or separately. All these changes combined raised the plant's capacity from 160 cubic yards per hour of mainly sand and railroad ballast, to 225 cubic yards of sand and graded aggregates. A new tunnel-storage and reclaiming system is now being added which will double the storage capacity for finished materials.

• Composite view of pit and plant with crushing, and car and barge-loading departments at left.



The development of the pit in a northerly direction parallel with the shore line has extended the system of field belt-conveyors to a total length of about 800 feet. The material

• One of the two 4- by 12-foot screens used for secondary sizing of gravel.

now traverses an arc of nearly 180 degrees before reaching the main plant. At the base of the 240-foot bank the Marion No. 125 electric crawler crane with its 4½-cubic yard dipper loads the material into the 40-cubic yard steel hopper. An 8-inch rail grizzly rejects boulders too large for the crushers. A belt feeder discharges the material on the first of the 30-inch field conveyors. The shovel is used to handle the hopper and the 30-foot steel conveyor sections when moving to a new location.

The original 30-inch by 222-foot main inclined belt-conveyor carries the material to the top of the raw-material-storage structure where the original 4- by 10-foot shaker screen was replaced with a 5- by 14-foot Tyler Ty-Rock single-deck screen. This scalps off coarse gravel for crushing and the size of cloth used on it varies from 1½ to 3 inches depending on fluctuations in the demand. A 20-inch by 60-foot radial boom conveyor, suspended by cables from an A-frame, discharges the coarse gravel on a 10,000-cubic yard stock pile over an arc of 180 degrees.

The sand and gravel passing through this screen drops on a 30-inch by 40-foot reversible shuttle belt-conveyor on rails which discharges it on the 6,000-cubic yard raw-material stockpile. This material is reclaimed through a 135-foot tunnel on the 30-inch by 410-foot conveyor to the top of the screening building.

There has been no major change in the sand separating and sizing system at this point. The material from the conveyor is discharged into a head box where water from two 8-inch pipes is added. These feed 3,000 g.p.m. compared to 2,400 g.p.m. from the former 6-inch pipes. The flow is split into two flumes in which ¼-inch stationary bumper screens separate the sand from the gravel. The sand and water flow into two 4- by 50-foot by 12-foot deep settling boxes with bottom-discharge gates controlled by levers from above. Four grades of sand are now produced and these are discharged into separate 250-cubic yard bins. In addition to plaster, paving and building sands a superfine sand—about 50 to 60 per cent. through 48 mesh—is made for blending with the other grades.

The gravel screening is still done in two duplicate systems but these have been changed considerably.

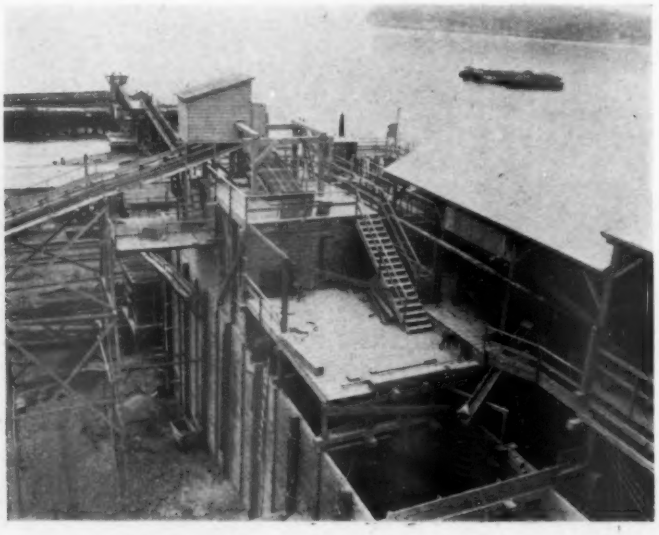
• Left—View looking down main conveyor from plant at raw-and-oversize material storage piles. Final conveyor from pit is at left. • Right: View of screening building with some of the new bins and screens. In background is the barge-loading dock.

The gravel passing over the stationary screens formerly dropped into two de-rooter boxes in which bark, roots, etc., were floated off. Bucket elevators fed the gravel from these boxes to the first pair of sizing screens. As there are no roots in the deposit where it is now being worked the boxes and elevators have been removed. The gravel is now fed direct from the stationary screens for primary sizing on two 4- by 12-foot Tyler Ty-Rock double-deck screens which replaced the original 4- by 10-foot triple-deck shaker screens. Having split bottom decks the two new screens also make 3 sizes of gravel, usually ¾-, ½-, and

• The tractor and bulldozer used to reclaim materials from the stockpiles.

⅜-inch. The two smallest sizes drop into separate bins.

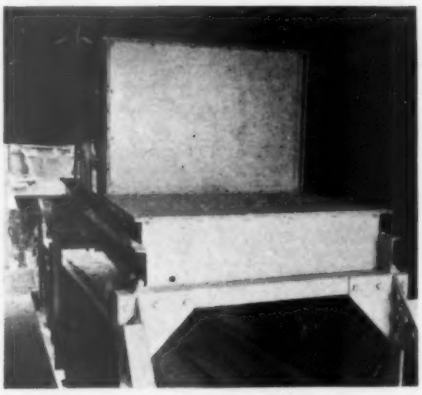
The plus-¾-inch gravel over the top decks of these screens is carried on two 20-inch by 30-foot inclined belt-conveyors. These feed to a pair of 4- by 10-foot Tyler Ty-Rock double-deck screens for secondary sizing which usually make 1½- and 1-inch sizes. These replaced two 3- by 10-foot double-deck shaker screens. Recently a new 3- by 10-foot Tyler



screen replaced another shaker screen which received the material off the top decks of the secondary screen, when 2-inch gravel was to be made. A 70-foot conveyor carries this material to a bin. By changing the sizes of cloth used on these screens seven different sizes of gravel can be made and these are stored in separate bins.

Near the plant there is a pile containing several hundred thousands of tons of material, largely coarse gravel, which has been built up over a period of many years. Two Caterpillar tractors, equipped with Isaacson and Master bulldozers feed this material to a hopper over a 24-inch by 300-foot belt-conveyor. This feeds on a 4- by 10-foot shaker screen which scalps it according to demands the same as at the raw storage pile. The material passing over the screen is carried by a 20-inch by 110-foot belt-conveyor to the main oversize-gravel stockpile. The material passing through the screen is carried on a 20-inch by 140-foot inclined belt-conveyor directly to the main raw-material stockpile. In this way this material is treated in the same manner as the material from the pit and supplements it. At one time this setup contributed materially to the output of the plant but the amount of this material on hand has been greatly reduced and the setup is now used only in case of a breakdown in the pit or some other emergency.

The oversize gravel was formerly loaded by a steam locomotive crane into a small movable hopper on rails over a 20-inch by 138-foot belt-conveyor. When the stockpile was enlarged a wooden reclaiming tunnel with a rail-mounted reciprocating feeder was built under it and the conveyor was extended to a length of 200 feet. This discharges the gravel into a new Traylor 2-foot-



• The recording weighing device which is used on the barge-loading conveyor.

4-inch TY gyratory crusher in the crusher building. A new bucket elevator feeds the gravel to a 4- by 12-foot Tyler Ty-Rock double-deck screen. This replaced the original 4- by 8-foot double-deck electric vibrating screen. The oversize from the screen is taken by a bucket elevator to the 4-foot Symons cone crusher which formerly did all the crushing. The material through both decks of the screen and the product of this crusher are discharged on the 20-inch by 198-foot belt-conveyor to the top of the crushed-gravel screening building.

The original 4- by 10-foot triple-deck vibrating screen used for crushed-gravel sizing was replaced by a 5- by 12-foot Ty-Rock double-deck screen which is also equipped with washing sprays. The sprays are not used when dry rock is desired. When operating dry all three sizes made drop into bins. When screening wet the No. 10 material through the bottom deck is wasted. This material formerly went to another screen which has been removed.

The original storage system consisted of 6 gravel bins and 3 sand bins, each of 250-cubic yard capacity, under each of the two gravel and sand sizing systems. A third row of six 250-cubic yard bins was used for crushed-gravel storage. Seven new bins have been added. Now there are 7 gravel and 4 sand bins in each of the first two rows and 4 gravel, 1 sand and 4 crushed rock bins in the third row. The total storage capacity has been increased from 7,200 to 9,300 tons.

There has been no change in the arrangement of the reclaiming conveyors under these three rows of bins but the conveyors have been extended to reach the additional bins. The original 24-inch by 113-foot belt-conveyor under the crushed gravel bins has been extended to 148 feet and the 30-inch by 159-foot conveyor under the first row of gravel and sand bins is now 195 feet long. When cars are to be loaded materials can be discharged from either of these conveyors on the original 166-foot cross conveyor feeding the steel car-loading hopper. This conveyor is now 30 inches instead of 24 inches wide. A 30-inch by 24-foot shuttle conveyor loads cars from this bin at the rate of 200 cubic yards per hour. Shipments are made over the main line of the Northern Pacific Railway which runs along the shore past the plant.

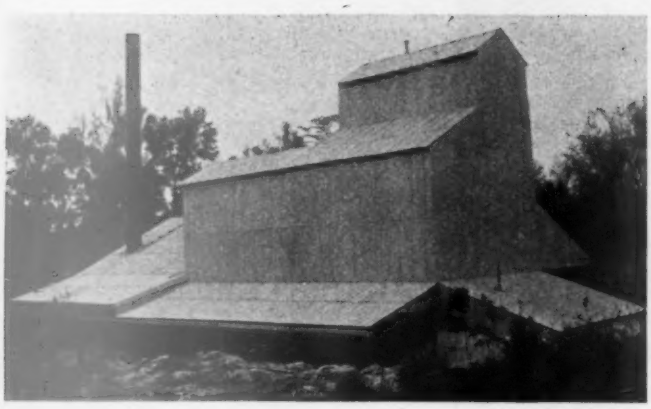
Under the third row of bins is the 30-inch by 434 foot reclaiming belt

(*Continued on page* 150)

• The main line railroad tracks and dock with tug and loaded barge heading out into Puget Sound.

• Looking down at the 4½-cubic yard electric shovel from the top of the 240-foot high face of the pit.

New Florida Plant Makes Calcium Feeds from Coquina Shell Deposits



The Same Deposit Also Supplies All Materials for Airport Runway Now Under Construction

• The coquina deposit with contractor's shovel loading out material for airport construction. The coquina shell drying and grinding plant is shown at left.

another ON THE SPOT report

FROM business analyst in Indiana to producer of calcium feed for chickens in Florida is quite a step but Howard J. Wisehaupt seems to have made it successfully. Perhaps it was his previous experience which enabled him to see the possibilities in the Florida coquina shell rock which has been put to little use since the Spanish used it to build forts and other structures centuries ago. Fort Matanzas near St. Augustine is a good example of the durability of this material. Coquina deposits extend along the Florida east coast from St. Augustine to Jupiter Light House near Vero Beach, a distance of 170 miles but few of these are above ground water level. About 40 years ago such a deposit was found 6 miles east of Bunnell, Florida, and this was worked for building rock for a few years. It was then forgotten until it came to the attention of Mr. Wisehaupt. He organized the firm of Calcium Product, Incorporated, with himself as president and then began the construction of a processing plant which was ready for operation late in 1942. He engaged as general superintendent L. L. Shiles who had operated a small plant near Ormond which is said to have been the first to make poultry grits from coquina. The fine products of the plant, sold under the trade name "Ko-Kee-Na," and the "Calpro" grits, contain over 96 per cent. calcium carbonate equivalents. The capacity of the plant is about 75 tons daily.

The deposit is very extensive and consists of two layers of shell rock

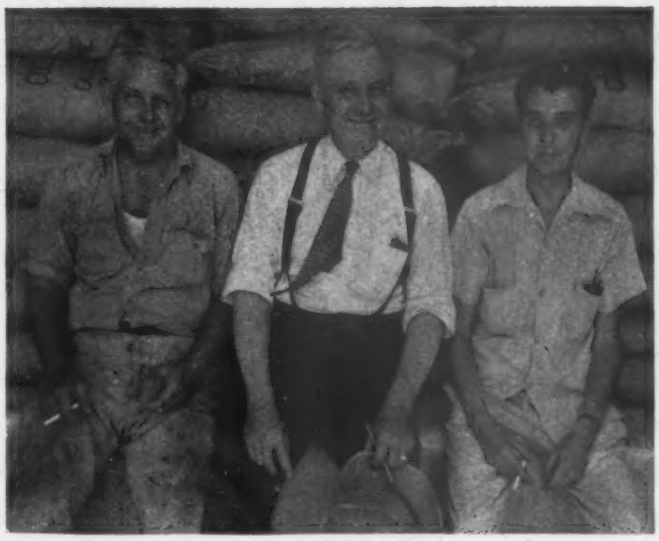
By W. E. TRAUFFER

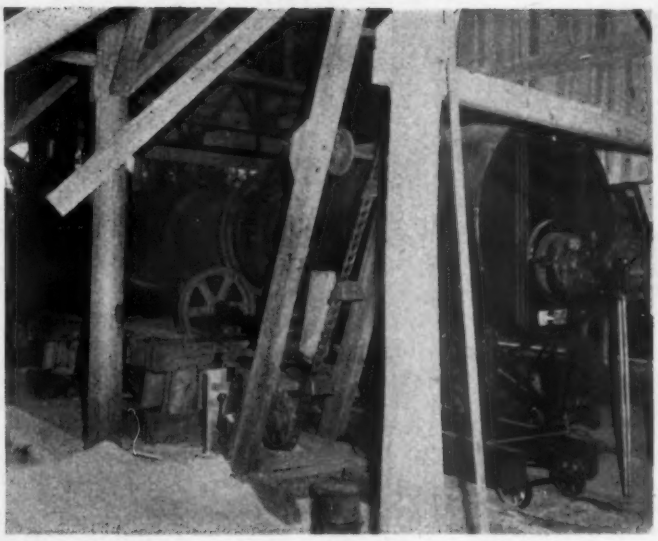
with sand overburden up to 4 feet in depth. This is removed by bulldozers by a contractor who is using the coquina mixed with marl as base course, and with sand as asphalt surfacing for a local air field. In removing the 150,000 cubic yards of rock for this project enough of the deposit is being opened up for many years' operation of the plant. The top layer of well-bonded coquina shells is 3 to 7 feet thick and is sold for rip rap. It is drilled with hand auger drills and shot out of the way. The bottom layer consists of 12 to 18 feet of soft, loosely-bonded coquina shells with occasional sand streaks. This is at present loaded into trucks with hand shovels. Post-war plans include the installation of equipment to crush and screen the hard rock for road material. In this case a power shovel will be used to load both materials.

The soft shell is discharged from the trucks to the boot of a Maddox chain bucket elevator. This feeds it into the 4- by 37-foot Maddox rotary drier which consists of 8 cast-iron sections. The three rings on this drier ride on pulleys on two drive shafts through which it is driven. A 35-hp. International gasoline engine drives the drier and the elevator. The drier is unlined but is equipped with lifters. It is fired by a Ray oil burner.

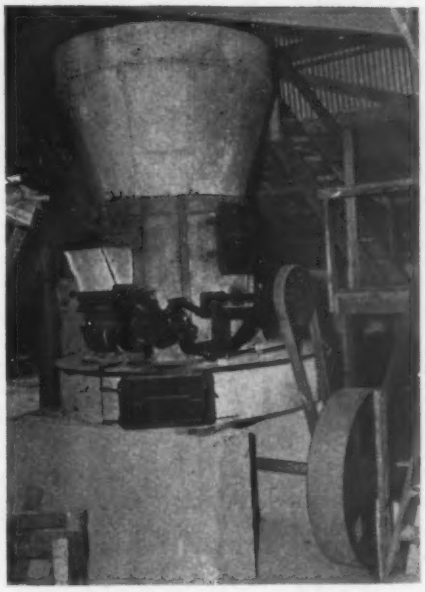
The dried shell is fed by another Maddox chain-bucket elevator to a Maddox rotary screen. This makes chick and hen grits which are discharged into separate bin compartments. This screen also removes the 3 to 5 per cent. of sand in the shell. The oversize shell drops into another compartment from which it is taken by a drag chain conveyor to the feeder of a Raymond 3-roll high-side mill which is equipped with a single whizzer. This has in its circuit a Raymond suction fan, an 8-foot diameter Raymond cyclone, and a Raymond bag-type dust collector. The mill is driven by a 125-hp. Buda Diesel engine through a Twin Disc clutch and Browning V-belts. This engine also drives the drag conveyor and the fan through flat belts.

The products of the separator and the collector drop into separate bins. These products are sold for land-lime, road topping, poultry and beef mashes, mineral feeds, fillers, etc. All these products are loaded into paper bags from the bin spouts by a Richardson wheel-mounted portable automatic bagger. The filled bags are sewed by a Wilcox & Gibbs machine suspended from a spring hoist.

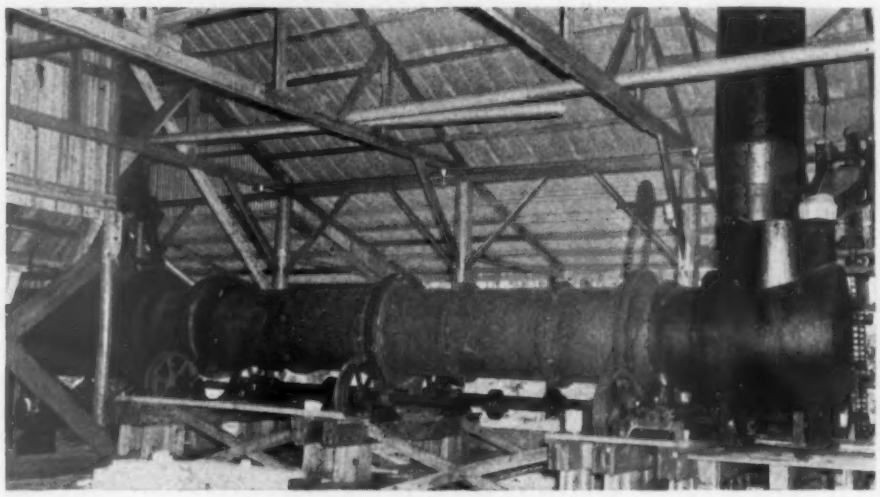




The 4- by 37-foot rotary drier with burner at right.
• Left: L. L. Shiles, general superintendent; H. J. Wisehaupt, president and treasurer; F. C. Drake, secretary. Background—Some of products.



• The 3-roll high-side mill with single whizzer separator which does all the grinding.



• Another view of the sectional cast iron drier showing manner in which it is driven through pulleys on drive shafts.

• Shown here is the 125-horsepower Diesel engine which drives the mill conveyor and fan.

• Left: The wheel-mounted portable automatic bagger which is moved under the desired bins. At left in picture is the portable bag-sewing machine.

Sales of Nonmetallics Other Than Cement and Aggregate Held Up Well

IN 1944 as in 1943 most of the industries which suffered any great loss in production or sales were those depending on construction as their sole or major outlets but even these held up far better than the construction volume which was off about 47 per cent. Those most affected were cement, sand and gravel and, to a lesser extent, gypsum. Sharp drops were also suffered by other industries but for different reasons. The production of bauxite, and of magnesite used for magnesium manufacture was curtailed because of oversupplies of aluminum and magnesium. Although in most cases not even partial figures for 1944 are now available it seems certain that there were increases in the output of such materials as lime, feldspar phosphate rock, fluorspar, silica sand, dead-burned dolomite, talc, pyrophyllite, Fuller's Earth, bentonite, potash, pyrites, salt, mica, asbestos, garnet, quartz, lithium, mineral wool, diatomite, kyanite, mineral pigments, vermiculite, barites and flint lining and grinding pebbles. Losses in production and/or sales, in most cases moderate, were suffered by the following industries: Kaolin, graphite, roofing granules, ball and fire clays, tripoli, pumice and pumicite, marl and greensand, slate, magnesite, barite, and sulphur.

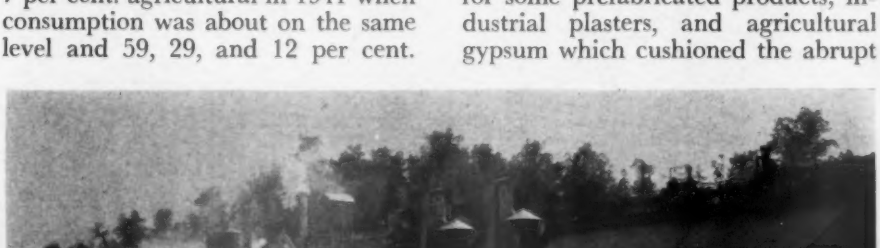
• View across quarry. New crushing plant of Batesville White Lime Company at Batesville, Arkansas. Primary crusher on the left. Screening plant and bins on the right.

Lime Although reports are not yet available on the production and shipments of lime for the last two months of 1944 and the earlier figures are not complete it seems certain that the sales of commercial lime and dead-burned dolomite in that year were up slightly from the 1943 total of 6,596,615 short tons, establishing an all-time high. This continues the steady increase in production which began in 1932 and which has continued in every succeeding year except 1938 when there was a temporary recession. It is significant that this trend continued during 1943 when the country passed from the construction into the production phase of the war program and through 1944 when the volume of construction was only about 30 per cent. of the 1942 peak.

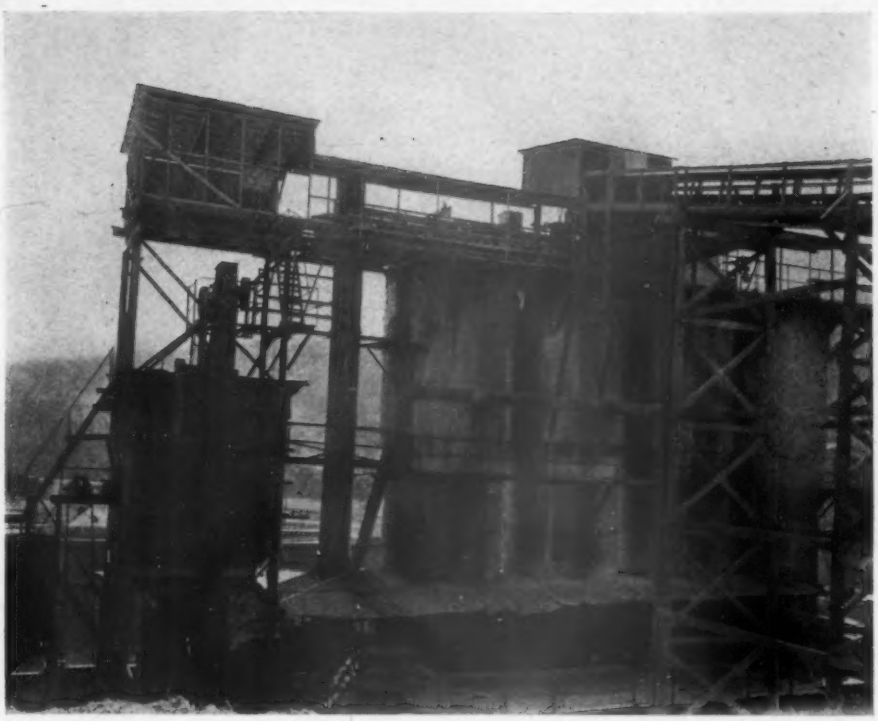
During these years the loss in the volume of lime sold for building purposes was more than offset by the increase in sales of lime for agricultural and chemical purposes and of dead-burned dolomite. The increase in the use of chemical lime was due largely to greater consumption as flux in steel making, in the purification of bauxite for aluminum smelting, and in the manufacture of calcium carbide. In 1944 apparently about 72 per cent. of the total sales of lime went for chemical purposes, 15 per cent. for building, and 13 per cent. for agriculture. This compares with 73 per cent. chemical, 20 per cent. building and 7 per cent. agricultural in 1941 when consumption was about on the same level and 59, 29, and 12 per cent. for the same categories in 1938 when the total consumption was considerably lower. Quicklime sales in 1944 amounted to about 67 per cent. of the total and hydrate about 33 per cent.

Gypsum The overall sales of gypsum and gypsum products in 1944 probably dropped slightly below the volume of 1943. This was due largely to the continued drop in construction volume and cement production but, as in 1943, was undoubtedly considerably less than the drop in those index industries. In 1943, with a drop of about 47 per cent. in the overall construction volume and 30 per cent. in cement shipments the drop in the dollar volume of gypsum and gypsum products sold was only about 6 per cent. With a drop in 1944 of 40 per cent. in construction volume and 28 per cent. in cement shipments a drop of only about 5 per cent. in the value of gypsum and gypsum products sold is indicated. Even this slight decrease might have been wiped out, however, by the fact that in the first three months of 1944 the downward trend in the overall activity of the industry was halted. The production of crude and calcined gypsum in this period—the measures of general activity—were reported by the U. S. Bureau of Mines to be 8 and 15 per cent. higher than in the first quarter of 1943.

The comparatively favorable showing of the gypsum industry is due largely to the strong demand for some prefabricated products, industrial plasters, and agricultural gypsum which cushioned the abrupt



• General view of Batesville lime plant with some of kilns visible in background. The hydrating department is at left.



• The four large vertical kilns of Gager Lime Manufacturing Company at Sherwood, Tennessee, with new feed conveyor system. The kiln at left has center burner, the others 2-level burners.

declines in the sales of plasters, lath, tile and cement retarder. With increases in construction volume, cement production, and agricultural consumption predicted for 1945 and no indication that industrial demands will fall off it seems possible that the overall sales in that year may slightly exceed the 1944 total. The post-war outlook continues to look highly favorable due to the constantly-growing volume of anticipated post-war construction, especially residential, which is reaching astronomical proportions. Manufacturers are planning extensive additions to existing facilities to meet this demand.

An interesting development of 1944 was the acquisition by Henry J. Kaiser of the Standard Gypsum Company which has a plant at Long Beach, California and deposits in Nevada, Alaska, and on San Marcos Island in the Gulf of California. It has also been announced that new plants will be built by this company in the San Francisco Bay and Seattle areas.

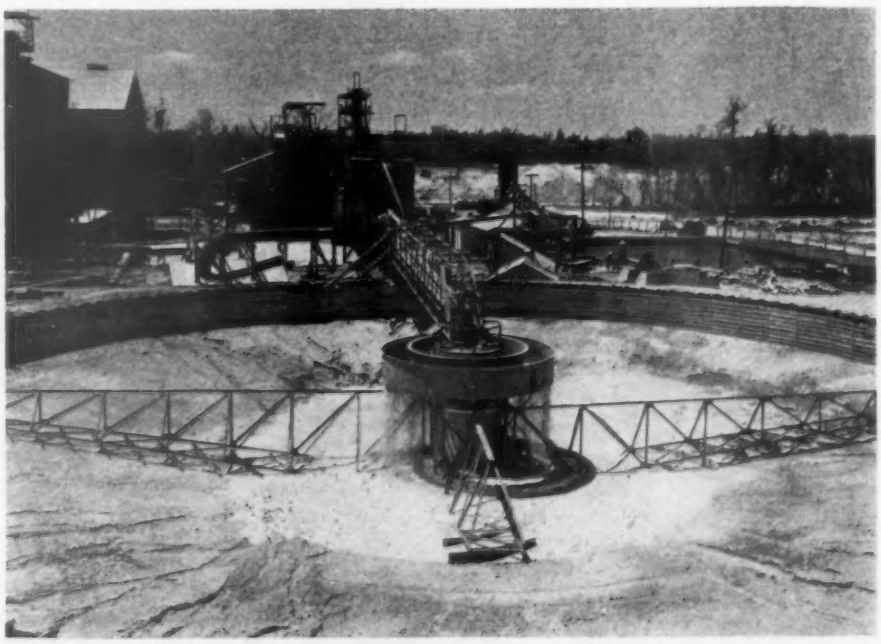
The National Gypsum Company has announced that it will build a new wall-board plant in Baltimore.

Phosphate The production of phosphate rock in 1943 reached a record level of 5,126,232 long tons, 10 per cent. above the 1942 level of 4,644,240 tons. This increase was due to a number of factors including the growing demand for phosphorus for use in the war and in war plants, and the increased agricultural demand spurred on by the AAA.

Although no production figures are yet available it seems certain that the 1944 output reached an even higher level, some estimates say as much as 15 per cent. The capacity of the industry was considerably expanded in 1944 by the construction of new plants and the enlargement of existing operations. The activity in the Montana and Idaho fields was particularly notable as new facilities there greatly increased the formerly small contribution of these states to the total production. Further plant expansions are planned in Montana, Florida and Tennessee.

Fluorspar The production of fluorspar in 1943 was 406,016 tons, an increase of 11 per cent. over the 1942 record production of 360,316 tons. This increase was due to the continually expanding demands of the steel industry and the many other vital war industries using this material. As these industries nearly all set new records in production in 1944 it seems likely that fluorspar production may also have set another new record. It seems doubtful, however, if production approached the 500,000 ton level for 1944 predicted by the WPB early in the year due to labor shortages. A bearish note is introduced by the Bureau of Mines report that production in the first quarter of 1944 was down 9 per cent. from the last quarter of 1943 while shipments were up 1 per cent. March, 1944 consumption hit a new monthly peak. Continued activity in 1945 can safely be predicted.

The industry continued the expansion program begun in 1942 by adding more new plants and enlarging and improving those already in operation. One of the most interesting additions, fully described in the December, 1944, issue of PIT AND QUARRY, was the installation early in 1944 of a heavy-media separation department in the plant of the Rosiclare Lead & Fluorspar Mining Company at Rosiclare, Illinois. This company is believed to



• The new 200-foot diameter thickener at the Peace Valley, Florida, plant of the International Minerals & Chemical Corporation.

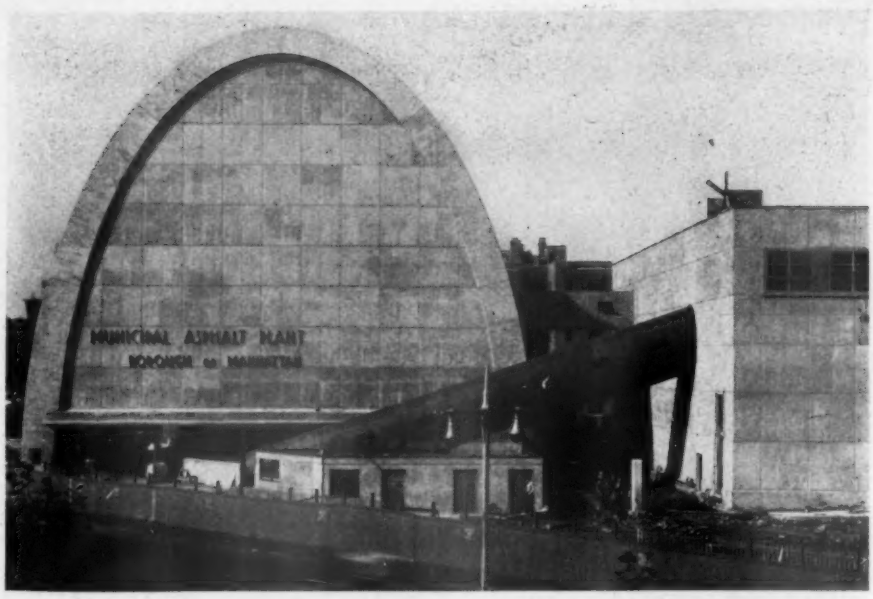
be the world's oldest and largest producer of fluorspar. The addition was made primarily to increase the output of metallurgical and ceramic grades of fluorspar.

A similar installation is in operation at the new plant of the International Minerals & Chemical Corporation at Gila, New Mexico. A new plant was also built by the Western Fluorspar Corporation, Northgate, Colorado.

Magnesite The production of magnesium raw materials for the manufacture of magnesium metal, basic refractories and for other essential commodities was greatly expanded in 1943. The variety of raw materials used included magnesite, brucite, dolomite, raw sea water, sea water bitterns and well brines. According to the Bureau of Mines the mine output of magnesite alone jumped from 497,368 short tons in 1942 to 754,832 in 1943.

This increase was due largely to the tremendous increase in the production of magnesium at the plant of Basic Magnesium, Inc., Las Vegas, Nevada. As the output of this plant was sharply curtailed in 1944 along with that of other magnesium plants due to an oversupply of this product there was undoubtedly a sharp drop in the production of magnesite in 1944, some estimates are as much as 30 per cent.

Late in 1944 production was begun at a new magnesite crushing and screening plant on the Heizer-Segerstrom property near Lovelock, Nevada. The capacity is about 500 tons daily.



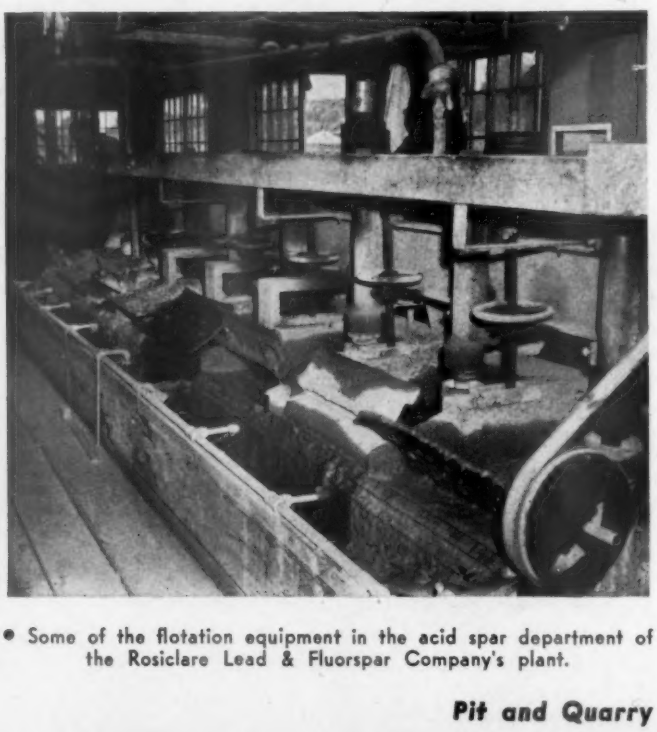
• The modernistic new asphalt plant operated by the Borough of Manhattan.

Dead-Burned Dolomite Crushed dolomite, both raw and calcined, was used in increasing quantity in 1943 as a basic open-hearth dressing and for routine furnace maintenance. The total sales of dead-burned dolomite in that year were 1,276,725 short tons, a new record, as the result of an uninterrupted increase from the 366,626 ton volume in 1938. No figures for 1944 are yet available but it is probable that there was a further slight increase due to the increase in steel output to a new record level.

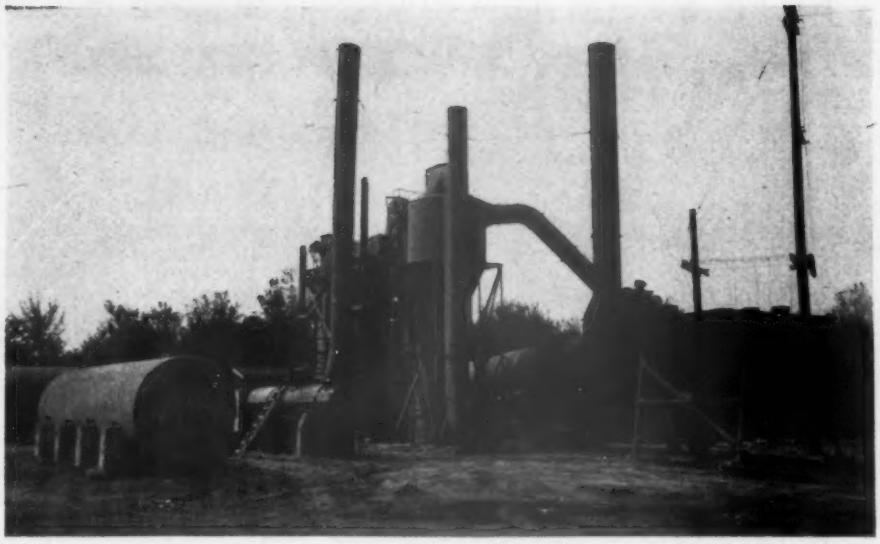
Bauxite The production of bauxite in 1944 apparently dropped sharply from the peak level of 1943 when 7,026,040 short tons (dried bauxite equivalent) was produced. This 1943 figure compared with 2,966,221 tons in 1942. Imports also set a new record in 1943. Domestic mine production in 1943 was 6,752,250 tons compared to 2,768,343 tons in 1942. An article in the January, 1944, issue of PIT AND QUARRY described the plant developments and mining methods developed to meet this demand.

According to the Bureau of Mines a progressive decline in the domestic mine production of bauxite which began late in 1943 brought the total for the first quarter of 1944 down to 816,426 short tons, less than half the production in the last quarter of 1943. This decline is attributed to these factors: The attainment of government and industry stock-piles nearly equal to a full year's con-

• Magnetic separator used for the recovery of ferrosilicon from heavy-media separation system at Rosiclare fluorspar plant.



• Some of the flotation equipment in the acid spar department of the Rosiclare Lead & Fluorspar Company's plant.



• New asphalt plant of Blue Rock, Inc., at Portland, Maine.

sumption at the early 1944 rate; the cutback of the alumina and aluminum program by the War Production Board which resulted in a sharp drop in consumption from the last quarter of 1943 to the first quarter of 1944; assurance that Canada's needs could be met from South American sources thus removing the possibility of large export shipments of dried ore from Arkansas.

Talc, Pyrophyllite and Ground Soapstone The sales of talc, pyrophyllite and ground soapstone in 1943 were 412,868 short tons, 6 per cent. over the 1942 level and it seems certain that 1944 also showed an increase. This was due to increased demands from the paint, rubber, paper, insecticide, and foundry facings industries.

Fuller's Earth The war has had a decidedly stimulating effect on the production of Fuller's Earth which had suffered an almost steady decline in sales from 288,400 short tons in 1931 to 146,568 tons in 1940. This decline is attributed to strong competition from synthetics and activated earths and the increase in popularity of colored gasoline. The reversal of this trend by wartime demands resulted in sales in 1941 of 207,446 tons, in 1942 of 204,244 tons and in 1943 of 271,667 tons. As from 80 to 84 per cent. of the output in recent years has been used for mineral oil refining, an industry which expanded its output in 1944 to meet growing war needs, it seems quite possible that the output in that year showed an increase, possibly even exceeding the 1931 peak. For the same reason the outlook for 1945 is excellent.

Bentonite The growing demand from defense industries and the enlarged oil-well-drilling program have been responsible for a steady increase in the use of bentonite since our entry into the war. The shipments of 480,202 tons in 1943 set a new record which was probably at least equalled in 1944. Only an early victory in the European theater of operations can reverse the upward trend in 1945.

Potash The production and sales of domestic potassium salts in 1943 again set new records. The production total was 1,428,840 short tons of salts containing 739,141 tons of equivalent potash. Sales came to 1,401,271 tons of salts containing 732,151 tons of potash. This increase followed a sharp upward spurt in 1942 caused chiefly by the expansion of production facilities in the Carlsbad, New Mexico, area which in 1943 supplied 82.5 per cent. of the total production of equivalent potash. The output in 1944 is not yet known but little change is expected and the prospects for 1945 are good. According to the U. S. Bureau of Mines the domestic producing capacity is now ample to care for normal domestic requirements under post-war peace-time conditions but post-war production will depend to some extent on foreign competition.

Feldspar In spite of growing competition from "aplite" and nepheline syenite the production of feldspar in 1943 just about held its own. The sales of crude feldspar dropped 2.5 per cent. from 316,166 long tons in 1942 to 308,180 long tons in 1943. The sales of ground feldspar, however, increased 2.4 per cent. from 327,786 short tons in 1942 to 335,810 short tons in 1943. The combined total was only about 7 per cent. below the peak year of 1941. No figures for 1944 are yet available but it is possible that the shortage of labor resulted in some temporary loss of production. The future prospects for the industry are generally favorable, according to the U. S. Bureau of Mines.

Barite According to the U. S. Bureau of Mines the most severe shortage of barite since World War I developed in the last few months of 1943, due in part to increased demands for well drilling, lithopane, chemicals, glass and fillers and in part also due to the labor shortage. The fact that the demand for barium chemicals, used chiefly to make flares and shell primers and in the case-hardening of steel, had increased steadily since 1941 with the growing extent of our participation in the war was also undoubtedly a factor. This condition apparently carried over into 1944 and may have at least partly checked the drop in the output of crude barite which fell from the all-time high of 449,873 short tons in 1942 to 429,298 tons in 1943.

Sulphur and Pyrites According to the Bureau of Mines the production of crude native sulphur in 1943 totaled 2,538,786 long tons, 27 per cent. less than the record volume of 3,460,686 tons in 1942. Shipments, however, presented a slightly different picture, dropping off gradually from the record volume of 3,401,410 long tons in 1941 to 3,128,559 tons in 1942 and 2,953,845 tons in 1943.

Pyrites (ores and concentrates), containing about 42 per cent. sulphur, have shown a steady upward trend since 1941. The 1943 production was 802,384 long tons, an increase of 10 per cent. over 1942 and 1944 was up 6 per cent.

There was a considerable increase in the production of sulphur from other sources which contributed to a record apparent consumption in 1944 of 3,500,000 long tons of sulphur from all sources. About 75 per cent. of the sulphur was converted into sulphuric acid before entering its final use and about 20 per cent. of it was used for agricultural purposes.

The E. P. Bishop Company of Orland, California, has recently completed the erection of a crushing-and-screening plant for aggregates and a batching plant for concrete north of Adin.

New Jersey Enacts New Law Covering Silicosis and Abestosis

THE legislature of the State of New Jersey has enacted into law a new bill dealing with silicosis and asbestosis known as Chapter 88, Public Laws 1944, and supplementing Chapter 15 of Title 34 of the Revised Statutes. The full text of the law which becomes effective January 1, 1945, follows:

STATE OF NEW JERSEY
CHAPTER 88—P.L. 1944
APPROVED APRIL 10, 1944
(SILICOSIS AND ASBESTOSIS)

AN ACT establishing an elective system of compensation for the occupational diseases known as silicosis and asbestosis, and regulating procedure for the determination of liability and compensation thereunder, and supplementing chapter fifteen of Title 34 of the Revised Statutes.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. Employer and employee may elect to accept or not to accept the provisions of this act. Such election in respect to the provisions of this act may be made in like manner as provided in sections 34:15-7 to 34:15-11 of the Revised Statutes in respect to accidents. When employer and employee have accepted the provisions of this act every such employee who, in the regular course of his employment, suffers total disability or death as the result of silicosis or asbestosis, as hereinafter defined, shall be entitled to workmen's compensation, as hereinafter provided in this act.

2. Definitions: (a) "Silicosis" means a disease of the lungs, due to breathing air containing silicon dioxide (SiO_2) dust, characterized anatomically by generalized fibrotic changes in the lungs, with a development of miliary nodulation, demonstrable by X-ray examination or by autopsy, resulting from any process or occupation involving the inhalation of silicon dioxide (SiO_2) dust.

(b) "Asbestosis" means a disease of the lungs, due to breathing air containing asbestos dust, characterized anatomically by generalized fibrotic changes in the lungs, demonstrable by X-ray examination or by autopsy, resulting from any process or occupation involving the inhalation of asbestos dust.

(c) The word "disability" means the state of an employee's being actually incapacitated, because of silicosis or asbestosis, from performing his work in the last occupation in which he was injuriously exposed to the hazards of such disease. The word "disablement" means the event of being so incapacitated.

3. Where an employee suffers from silicosis or asbestosis as defined in section two of this act, and is thereby totally disabled, as disability is therein defined, or dies as a result of such disease, and the disease was due to the nature of said last occupation, in which he was employed within the period previous to his disablement as limited in this section and in sections four and five of this act, if he and his employer in such occupation were then subject to this act, the employee, or in case of his death his dependents, shall except as otherwise provided in this act, be entitled to compensation in the amount and payable in the manner provided in article two of chapter fifteen of Title 34 of the Revised Statutes, as if such total disability, as herein defined, or death resulted from injury by accident.

No compensation shall be payable for silicosis or asbestosis if the employee, at the time of entering into the employment of the employer by whom the compensation would otherwise be payable, falsely represented himself in writing as not having previously been disabled, laid off, or compensated in damages or otherwise, because of either of such diseases.

Where silicosis or asbestosis is aggravated by any other disease or injury, not itself compensable, or where disability from any other cause, not itself compensable, is aggravated, prolonged, accelerated or in anywise contributed to by silicosis or asbestosis, or where death from any other cause, not itself compensable, is accelerated or in any wise contributed to by silicosis or asbestosis, the compensation payable shall be reduced and limited to such proportion only of the compensation that would be payable if silicosis or asbestosis were the sole cause of the disability, as herein defined, or death, as silicosis or asbestosis, as a causative factor, bears to all the causes of such disability or death, such reduction in compensation to be effected by reducing the number of weekly or monthly payments or the amount of such payments, as indicated by the circumstances of the particular case.

4. No compensation for death from silicosis or asbestosis shall be payable to any person whose relationship to the deceased, which, under the provisions of this act would give a right to compensation, arose subsequent to the beginning of the first compensable disability, as herein defined, save only to after-born children.

Where compensation is payable for silicosis or asbestosis under this act, the employer in whose employment the employee was last injuriously exposed to the hazards of such disease for sixty days or more, and the insurance carrier, if any, on the risk when such employee was last so exposed under such employer, shall alone be liable therefor; the amount of the compensation shall be based upon the wages, as defined in section 34:15-37 of the Revised Statutes, of the employee when last so exposed under such employer; and the notice of injury and claim for compensation, as hereinafter required in section six of this act, shall be given and made to such employer.

An employer shall not be liable for any compensation for silicosis or asbestosis unless such disease shall be due to the nature of an employment in which the hazards of such disease actually exist and are characteristic of and peculiar to the trade, occupation, process or employment, and was actually incurred in his employment, and unless total disability, as herein defined, or death results within three years after the last injurious exposure to such disease in such employment, or, in case of death, unless death follows continuous total disability, as herein defined, from such disease, commencing with the period above limited, for which compensation has been paid or awarded or claim filed as provided in this act and results within seven years after such last exposure.

5. In the absence of conclusive evidence in favor of the claim, disability, as herein defined, or death shall be presumed in fact not to be due to the nature of any occupation within the provisions of section two of this act, unless during the ten years immediately preceding the date of disablement the employee has been exposed to the inhalation of silicon dioxide (SiO_2) dust or asbestos dust, as the case may be, over a period of not less than five years, one year of which shall have been in this state, under a contract of employment existing in this state; *provided however*, that if the employee shall have been employed by the same employer during the whole of such five-year period, his right to compensation against such employer shall not be affected by the fact that he had been employed during any part of such period outside of this state.

Neither compensation or damages shall be payable for partial disability due to silicosis or asbestosis in respect to any employee subject to the provisions of this act, nor shall there be any liability in tort for damages for total disability or for death from silicosis or asbestosis. In the event of total disability, as herein defined, or death from uncomplicated silicosis or asbestosis, compensation shall, except as otherwise provided in this act, be payable to employees and their dependents as follows:

(a) Compensation for total disability, as herein defined, or death shall be paid as specified in paragraph b of section 34:15-12 of the Revised Statutes; except as provided in paragraph (b) of this section.

(b) If disablement occurs, or, in the case of no claim for prior disablement, if death occurs, in the calendar month in which this act becomes effective, the total compensation payable, whether for disability, as herein defined, or death or both, shall not exceed the sum of one thousand dollars ($1,000.00). If disablement occurs, or, in the case of no claim for prior disablement, if death occurs, during the next calendar month, the total compensation payable shall not exceed one thousand and fifty dollars ($1,050.0). Thereafter the total amount of compensation for death and total disability, as herein defined, shall increase at the rate of fifty dollars ($50.00) per month; the aggregate amount payable to be limited according to the foregoing formula for the month in which total disability, as herein defined, occurs, or, in case of no claim for prior disability, in which death occurs. Such progressive increase in the limitation of the total amount in any event payable for total disability, as herein defined, and death due to silicosis or asbestosis shall continue only until such total amount equals but does not exceed the sums which would be payable to the particular employee or his dependents had such total disability, as herein defined, and death been due to an injury by accident.

6. Unless the employer during the continuance of the employment shall have actual knowledge that the employee has contracted silicosis or asbes-

(*Continued on page* 137)

Expert Discusses Problems of Off-Road Haulage Units In Pits and Quarries

Part Four (conclusion)

As in the three previous articles on the subject, the writer backs up his views with factual data that are of practical value in solving haulage problems.

By H. K. CHURCH, C. E.
District Representative
Euclid Road Machinery Co.

• Figure 15. Type "C" three axle tractor-trailer "semi" truck—25-ton bottom dump coal hauler as used largely in the central states strip coal mines. Truck weighs about 43,000 pounds, hauls about 27 to 28 tons of coal, and costs about $13,000.

another P&Q exclusive

IN three previous articles we treated of characteristics and operations of type "A" 2-axle load-on-back and type "B" 3-axle tandem-drive trucks. We have emphasized nine important characteristics which the prospective buyer might keep in mind when selecting a type of truck for a particular task: 1. Simplicity. 2. Adaptability. 3. Ease of Operation. 4. Rideability. 5. Ratio of Engine Horsepower to Gross Vehicle Weight. 6. Ratio of Slipping Point Tractive Force to Gross Vehicle Weight. 7. Ratio of Cost to Capacity. 8. Ratio of Tare Weight to Load Capacity. 9. Work Factor—Ratio of Total Work Done to Pay Work Accomplished. In this final article we treat of a third important type of truck—the tractor-trailer combination, or "semi." This type "C" truck is illustrated in Figure 15 which shows a 25-ton combination used in stripping.

There are several other different tractor-trailer combinations which are in use in open pits and quarries. One is a 3-axle tandem-drive tractor with double-axle trailer. Another is any one of the aforementioned tractor-trailer or "semi" units pulling a full trailer. All these combinations are more or less special and in general they call for particulaar job conditions. Their common chief characteristic is that they offer a lot of capacity in terms of tons for the investment. They may not offer a lot of capacity in terms of ton-miles which, after all, is the true measure of work.

• Figure 17. Loading out a 25-ton side dump "semi" in an Illinois strip coal mine. The trucks average 3.33 loads hourly on a haul of 1.47 miles, one way. Average load is 23.4 tons, giving an hourly production of 117 ton-miles per truck.

It is beyond the scope of this article to treat of any combination except the type of "semi" shown in Figure 15. Upon completing the appraisal of this truck, and with the background of information on types "A" and "B", one can properly evaluate other "semi" types and combinations which are simply variants of "A", "B", and "C".

Here are the general specifications of the type "C" tractor-trailer "semi" truck:

Rated load capacity.... 60,000 pounds
Tare weight of "semi".. 43,000 pounds
Gross vehicle weight....103,000 pounds
Average Diesel-engine horsepower .....175 horsepower
Tire sizes—
Front steering, singles.....12.00 × 24
Tractor driving, duals.....14.00 × 24
Trailer, duals .....14.00 × 24

Note: Oftentimes single tires of large dimensions are used on tractor driving and trailer wheels so as to increase flotation, traction, and clearance. These large single tires are generally 18.00 × 24 or 21.00 × 24. Such tires are used in the Arkansas bauxite fields, the Tennessee phosphate fields, and the central states strip coal mine fields.

Some of the aforementioned evaluation factors are readily calculable. Others are more or less intangible, and an evaluation depends on judgment. For types "A" and "B" trucks we assigned more-or-less arbitrary over-all evaluation factors, respectively 46 and 20. A corresponding

factor for the type "C" truck is worked up in the following fashion:

1. *Simplicity.*—The "semi" has a good degree of simplicity. It is simply a 2-axle tractor of specifications comparable to the chassis of a type "A" truck with inherent simplicity connected up to a single-axle trailer by means of a fifth wheel or universal. Bottom, side, or rear dump bodies may be used. A factor of 1.00 is assigned.

2. *Adaptability.*—The "semi" can be classified as fair with a factor of 0.75. While the unit can be equipped with just about any type of body, nevertheless the truck can not be shifted from one type of work to another because of the qualities peculiar to a "semi." For example, the unit might be equipped with a side-dump body for hauling stone from the loading shovel to the primary crusher. Such a setup might be ideal for the stone haul. However, the same machine might not be used effectively for hauling overburden or for stock-piling crushed stone. The "semi" is a more-or-less special-purpose tool, as opposed to the type "A" 2-axle load-on-back truck which is a kind of "roustabout."

3. *Ease of Operation.*—Essentially the "semi" is an easy machine to operate. It is not as maneuverable as a 2-axle truck and therefore in close quarters there are more movements for the driver. One should probably classify ease of operation as fair with a factor of 0.75.

4. *Rideability.*—A "semi" rides just about as well as a type "A" 2-axle truck which is the prototype of the tractor. The tractor has just about the same wheelbase although it may be a little shorter. Generally a shorter wheelbase means a rougher ride, but in the case of the "semi" the trailer has a steadying effect on the tractor which serves to compensate. A rideability factor of 0.75, the same as that of type "A", is assigned.

5. *Ratio of Engine Horsepower to Gross Vehicle Weight.*—With a rated horsepower of 175 and a gross vehicle weight of 51.5 tons, the "semi" has a ratio of engine horsepower to gross vehicle weight of 3.40. This is a fair ratio when compared to 5.83 for the 15-ton capacity 2-axle type "A" truck.

6. *Ratio of Slipping Point Tractive Force to Gross Vehicle Weight.*—Forty-four per cent. of the gross vehicle weight of a "semi" is on the driving wheels. With a coefficient of friction of 33 per cent. between the tires and the average haul road the ratio of slipping-point tractive force to gross vehicle weight is 0.15. This is a very low factor and its lowness is emphasized by the fact that "semi's" are not good performers in wet and icy conditions, especially on heavy grades. In order to compensate for this shortcoming extra-large single tires are sometimes substituted for the smaller dual tire setup of each wheel and this results in better traction, flotation, and riding qualities.

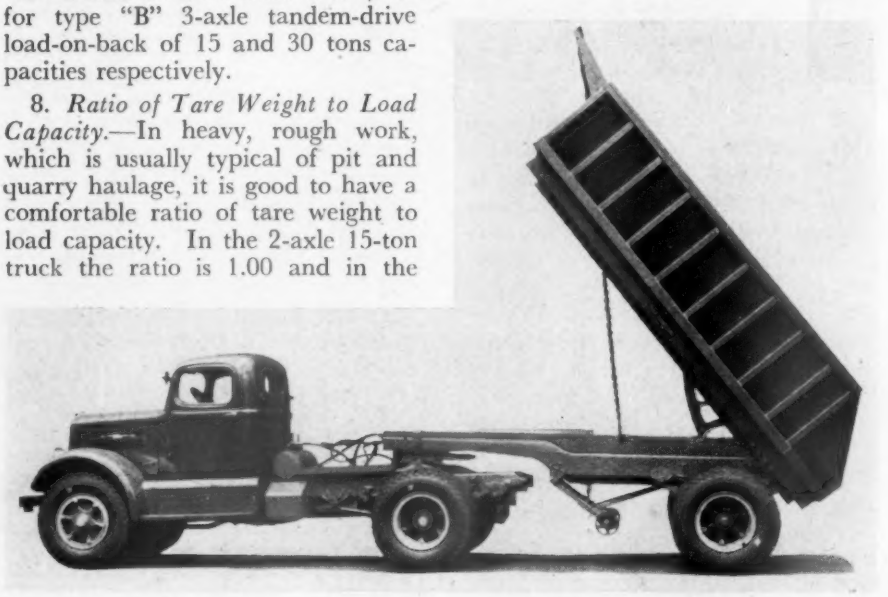
7. *Ratio of Cost to Capacity.*—One of the advantages of the "semi" is the cost-capacity ratio, and the advantage is partly responsible for the many "semi's" which are in service in highway transportation. Assuming a cost of about $15,000 for a 30-ton Diesel "semi", the cost per ton of capacity is $500. This factor is lower than those of the type "A" and type "B" trucks—$800 for type "A" 2-axle load-on-back and $600 for type "B" 3-axle tandem-drive load-on-back of 15 and 30 tons capacities respectively.

8. *Ratio of Tare Weight to Load Capacity.*—In heavy, rough work, which is usually typical of pit and quarry haulage, it is good to have a comfortable ratio of tare weight to load capacity. In the 2-axle 15-ton truck the ratio is 1.00 and in the 3-axle tandem-drive truck the ratio is 0.75. In the "semi" the ratio is about 0.72. Although this ratio appears to be low, it is actually sufficient because a "semi" does not carry the load on its back and therefore the tractor chassis is spared a portion of the impact. This happy condition has made it possible to combine a very heavy rugged trailer chassis with a comparatively-light tractor chassis so that the tractor hitch sometimes takes only about 30 per cent. of the combined weight of the trailer and the load.

9. *Work Factor—Ratio of Total Work Done to Pay Work Accomplished.*—It has been developed in previous articles that the work factor of a truck—a measure of the amount of total work it must do in order to accomplish a given amount of "pay" work—is obtained by adding two times the tare weight to the pay load and dividing the sum by the pay load. The equation is derived by cancellation of equal rolling resistances and equal distances from expressions of work. For the "semi" the factor is 2.45. This is the best factor of the three types of trucks treated of in these articles, the factor being 3.00 for the type "A" 2-axle load-on-back unit and 2.50 for the type "B" 3-axle tandem-drive load-on-back truck.

Over-all Evaluation Factor.—The over-all evaluation factor for the type "C" truck, assuming equal weights for the above-developed factors, is represented by the equation:

$$\frac{1.00 \times 0.75 \times 0.75 \times 0.75 \times 3.40 \times 0.15 \times 0.72}{500 \times 2.45} = 13$$



• Figure 18—Model view of a 16-ton capacity rear-dump semi-trailer unit, showing body in the raised or dumping position.

It has been emphasized that these theoretical over-all evaluation factors are simply indicative of the general value of the truck as an all-purpose unit, and that each factor ought to be analyzed with respect to the particular work for which the truck is intended.

Herewith is a tabulation of the arbitrary factors which have been assigned to the three types of trucks in this series of articles.

Type "A"—2-axle single-axle drive load-on-back truck

Type "B"—3-axle tandem-drive load-on-back truck

Type "C"—3-axle tractor-trailer "semi" with 2-axle single-axle-drive tractor and single-axle trailer.

	Type "A"	Type "B"	Type "C"
1. Simplicity	1.00	0.75	1.00
2. Adaptability	1.00	0.75	0.75
3. Ease of Operation	1.00	0.75	0.75
4. Rideability	0.75	1.00	0.75
5. Ratio of Engine Horsepower to Gross Vehicle Weight	5.83	3.33	3.40
6. Ratio of Slipping Point Tractive Force to Gross Vehicle Weight	0.25	0.29	0.15
7. Ratio of Cost to Capacity in Tons	$800	$600	$500
8. Ratio of Tare Weight to Load Capacity	1.00	0.75	0.72
9. Work Factor—Ratio of Total Work Done to Pay Work Accomplished	3.00	2.50	2.45
Over-all "all-purpose" evaluation factor	46	20	13

Stone Haulage At Wampum, Pennsylvania, the Medusa Portland Cement Company is operating three 16-ton capacity rear-dump semi-trailer units. Figure 17 shows a machine with the body raised.

The operation is unusual in that limestone is mined underground and the Diesel-engine trucks haul directly from the loading shovel at the face of the mine to a haul road leading to the primary crusher at the mill. The general specifications of the truck are given below:

Tare weight of complete "semi" tractor and trailer, about	24,000 pounds
Load capacity	32,000 pounds
Gross vehicle weight	56,000 pounds
Diesel-engine horsepower	83
Tire sizes, front steering singles, tractor driving duals, and trailer duals	10.50 × 20

Hauling Cycles.—There are both an underground and an open-pit operation in connection with the stone haulage.

The mining operation consists of loading under a 1½-cubic yard electric shovel and hauling 2 miles to the crusher. The first mile within the mine is level and the remaining mile on the open haul road is on an average minus 6 per cent. grade. The round-trip time is about 34 minutes, giving about 14 loads per truck per 8-hour shift. Each load averages 13.5 tons so that each truck hauls about 24 tons or 48 ton-miles hourly. Two trucks are used on this haul, giving a total of about 400 tons of rock per 8 hours. Assuming a loading, dumping, and turning time of 10 minutes, the average travel speed is about 10 miles per hour.

The open-pit operation haul is about a mile long and consists chiefly of the aforementioned open haul road. The round-trip time is about 17 minutes, giving about 28 loads per truck per 8-hour shift. The loads are about the same as in the mining operation so that each truck hauls about 48 tons or 48 ton-miles hourly. One truck is used on this haul, giving a total of about 400 tons of stone each 8 hours. The average truck travel speed is 10 miles per hour.

At the plant a pneumatically-lifted runway covers the crusher and after the loaded truck passes over the crusher the runway is lifted and the crusher opening is exposed.

Costs.—The haulage costs are purely our own estimate and bear no relationship to actual costs as secured by the company.

Estimated Hourly Cost of Ownership and Operation of One "Semi" Truck

Data:		
Approximate cost of complete unit, tractor and trailer		$ 7,000
Approximate cost of complete set of tires and tubes		$ 1,650
Cost of complete unit for purposes of figuring depreciation, tires and tubes to be set up as an operating account		$ 5,300
Depreciation period, 5 years of 2,000 hours each; *hours*		10,000
Fixed Charges:		
a. Interest, taxes, insurance, storage, at 10 per cent. of average investment of $4,200 per year of 2,000 hours		$ 0.21
b. Depreciation, straight-line method with no allowance for salvage value		.54
Operating Expenses:		
c. Mechanical repairs, replacements, and labor thereto		$ 0.50
d. Tires and tubes repairs and replacements, complete set every 3,000 hours or about every 21,000 miles		.53
e. Fuel oil, 2 gallons at 8 cents		.16
f. Crankcase oil, 0.1 gallon at 60 cents		.06
g. Grease and greasing labor		.10
		$ 2.35
Total hourly expense of ownership and operation		$ 3.10

Unit Costs:

	Per Ton	Per Ton-Mile
Underground haul: 2 miles total length, 1 mile in mine and 1 mile on open haul road; *cents*	12.9	6.5
Open-pit haul: 1 mile total length on open haul road; *cents*	6.5	6.5

The haulage system has worked very well and it has simplified operations both in the mine and in the open pit. At this time there is a thought of increasing the horsepower of the engines so that the unladen units can ascend the haul road on the return trip with more speed. Presently no power is required to roll down the minus grade with the load.

Coal Haulage An excellent example of side-dump semi-trailer operation is the hauling of strip-coal-mining coal is the Fidelity Mine of the United Electric Coal Company. The conditions are in some respects similar to those prevailing in some pits and quarries, and will, therefore, be of interest. The trucks are a fleet of 25-ton units which are best illustrated by Figure 16 showing the loading operation in the pit. Here follow notes on the operation as kindly provided by the mining company:

"Truck haulage has entirely replaced railway haulage at Fidelity, and coal is hauled direct to the tipple from two pits. At present all the tractors are pulling 30-cubic yard side-dump trailers. The engines are Diesels.

"When the mine first changed over to trucks they were used only in No. 1 pit and hauled only to the foot of the incline. A timber ramp was built, and the side-dump trailers dumped directly into standard-gauge pit cars which were then pulled to the tipple by steam locomotives. With the track removed pit operation was much more flexible, and the efficiency of the loader was increased. This method was given a trial for about ten months. While it was successful, the problem of maintaining the tracks and railway equipment remained with us. In the summer of 1941 a road was built to the tipple and direct haul was instituted in October of that year.

"The ramp at the foot of the incline is now used as a "safety valve" in case of tipple delays. The mine has twenty-one 40-ton pit cars on hand, and these are stationed at the ramp. If for any reason the preparation plant is down, the trucks dump into these cars after the hopper is filled, giving a reservoir of coal to be used in the event of any pit delay, thus helping to maintain production at all times.

"The coal surface at Fidelity is very irregular, particularly in No. 1 pit, and in wet weather the road-maintenance problem is increased, but it is well taken care of by strict attention to drainage. Maximum grades in the pit are about 5 per cent., and this condition exists for short distances only. Road maintenance in the pits is taken care of by two bulldozers and one auto patrol.

"The inclines from both pits to the tipple have maximum grades of 1.5 per cent., and are kept in practically perfect condition. The road from No. 1 pit was built with an 8-inch sub-base of mixed gob and clay. Gob, with about 20 per cent. added clay, was mixed with water in a machine, spread with the auto patrol and thoroughly tamped with a sheep's foot roller. When this base was thoroughly compacted it was covered with an 8-inch layer of mixed gob, clay, water, and asphalt emulsion. After spreading this mixture it was compacted with a sheep's foot and 10-ton plain roller until no indentation could be made on the surface with either roller. It was then covered with a seal coat of asphalt emulsion spread with a half-inch layer of stone chips. This road, 3,500 feet in length, has been used since October, 1941, and has required little maintenance other than an added seal coat in the summer of 1942.

"The haulage road from No. 2 pit was constructed in the summer and fall of 1942, and due to lack of time was built with a 12-inch coat of mine refuse, gob, put down in thin layers with thorough rolling and compacting after each course. This was covered with a seal coat similar to that on the No. 1 pit incline. The new section of road is about 4,500 feet long. This has been in service some months, and while it is holding up perfectly to date no definite conclusion can yet be drawn as to ultimate results.

"Practically all the maintenance of both roads is done by one man who patrols, constantly watching for developing holes, which are filled with crushed rock and compacted by the passing loaded trucks.

"Coal is loaded in No. 1 pit with an electric shovel and four 7-cubic yard buckets constitute the average load. No. 2 pit is equipped with a 4½-cubic yard shovel and seven full passes are made for each truck.

"The following statistics are for the month of December, 1942, but are typical:

Trucks and trailers (or complete "semi's") used	13
Truck days operated	286
Number of trips	6,811
Miles operated	20,047
Average round-trip haul, miles	2.94
Average tonnage per load	23.35
Ton-miles loaded or hauled	236,771
Hours operated	2,017
Hours lost due to breakdowns	36
Hours idle	26½
Fuel oil, gallons	7,140
Lubricating oil, quarts	1,075
Man-hours operating	2,085½
Man-hours servicing	390¼
Man-hours repairing	559½

The above report gives an excellent summary of a month of hauling, from which certain figures can be readily calculated. The estimated cost for haulage on the project is given below and it is purely our estimate and bears no relationship to the actual cost figures as secured by the company. By way of explanation of the cost of hourly expense of ownership and operation the general specification of the tractor-trailer "semi" are:

GENERAL SPECIFICATIONS OF EQUIPMENT

Tare weight of complete "semi"	40,000 pounds
Average load hauled	47,000 pounds
Diesel engine horsepower	150
Tires—	
Front steering singles	12.00 × 24
Tractor driving and trailer, duals	14.00 × 24

ESTIMATED HOURLY COST OF OWNERSHIP AND OPERATION OF ONE "SEMI" TRUCK

Data:

Approximate cost of "semi"	$14,000
Approximate cost of complete set of tires and tubes	$ 2,700
Approximate cost for figuring depreciation, tires and tubes to be set up as an operating account	$11,300
Depreciation period, 6 years of about 1,667 hours each; *hours*	10,000

Fixed Charges:

a. Interest, taxes, insurance storage, at 10 per cent. of average investment of $8,100 per year of 1,667 hours	$ 0.49
b. Depreciation, straight-line method with no allowance for salvage value	$ 1.13
	$ 1.62

Operating Expenses:

c. Mechanical repairs, replacements, and labor thereto	$ 0.70
d. Tires and tubes repairs and replacements, complete, set every 2,500 hours, or about every 25,000 miles	1.08
e. Fuel oil, 3.5 gallons at 8 cents	.28
f. Crankcase oil, 0.1 gallon at 60 cents	.06
g. Grease and greasing labor	.12
h. Driver and compensation	1.00
	$3.24
Total hourly expense of ownership and operation	$ 4.86

Production and Unit Costs:

From the foregoing statistics it is calculated that each truck averages 3.38 loads hourly on a haul of 1.47 miles, one way, with an average load of 23.4 tons.

Average hourly production and estimated unit costs are therefore:

Tons hauled per truck-hour	79
Unit cost, cents per ton	6.1
Ton-miles hauled per truck-hour	117
Unit cost, cents per ton-mile	4.2

It is quite interesting to note that this operation started out to be what is known as a transfer haul or a combination of automotive units with railway units. The results were so good with the automotive type of equipment that it was decided to haul all the way from the loading shovel to the tipple at the plant.

Another interesting feature is the discussion of the haul-road construction and maintenance methods which seem to have produced an excellent high-speed haulage system. One must keep in mind that good husky hauling equipment is not alone the answer to low unit costs. Haul roads are equally important because it is more expensive to travel 10 miles an hour on a poor haul road than it is to speed along at 30 miles per hour on a boulevard, the cost of the good road being prorated into the total unit cost for hauling.

It may be of interest to look quickly at another example of the haulage of strip-mine coal to illustrate the use of bottom-dump "semi's" in the same kind of operation. Near Linton, Indiana, the Central Indiana Coal Company is using a fleet of 25-ton bottom-dump coal haulers on a 3.5 mile, one-way haul with a gentle upgrade.

Here are general specifications of the particular truck used:

Tare weight of complete "semi", tractor and trailer	44,000 pounds
Rated load capacity	50,000 pounds
Gross vehicle weight	94,000 pounds
Gasoline engine horsepower	200
Tire sizes—	
Front steering, singles	12.00 × 24
Tractor driving, duals	14.00 × 24
Trailer, duals	14.00 × 24

Hauling Cycle:

	Minutes
Loading 8 buckets or average 27 tons of coal from 5-cubic yard shovel	3.0
Hauling 1.1 mile in pit over rough coal vein and 2.4 miles over good haul road, or total distance of 3.5 miles, one way at average speed of 15.3 miles per hour	13.7
Dumping and turning at preparation plant	.5
Returning 3.5 miles at average speed of 22.6 miles per hour	9.3
Turning at loading shovel	.7
Net cycle time	27.2

Production.—Each of the three machines in operation averages 14 loads per 7-hour shift. This is at the rate of two loads per truck-hour or 54 tons per truck-hour or 189 ton-miles per truck hour.

The following is a unit cost estimate for the haulage. The estimate bears no relationship to the actual cost figures as secured by the operator.

Developments in the Manufacture of Better Refractories for the Portland Cement Industry*—Part Two

By

LEOPOLD TSCHIRKY

General Refractories Company

THE equipment in a Portland-cement manufacturing plant employing refractory lining consists of kilns, kiln hoods, clinker chutes, clinker coolers, dust-collecting chambers, waste-heat boilers, stacks and driers. Each presents its own individual refractories problem in varying degree of complexity and importance. The most severe refractories problem of all, however, is encountered in the kiln itself.

So, let us first consider just the kiln and observe the various functions of successive sections of the kiln lining. For this purpose we will proceed on the premises that the essential difference between wet-process kilns and dry-process kilns is that the former, into which wet material is charged, must necessarily be longer—all other factors equal—than dry-process kilns, into which a dry material is charged, and also, that the greater length of the wet-process kiln is the length required thoroughly to dry the wet charge in its travel down through the kiln. The refractory requirements and service conditions encountered in the wet-process kiln, from the place in the kiln where the material charged has lost all external moisture right down to the discharge end, are so very similar to those in the dry-process kiln that, based on the flow of material and the reactions taking place, both kilns can be divided into four zones common to each with some overlapping of adjacent zones. These zones are indicated in Figure 5. (The length of each zone for kilns of the sizes shown are approximate and will differ in different operations depending upon over-all kiln operating conditions. Likewise, the temperatures shown are approximate.)

Feed-End Blocks.—If we start at the feed end and work our way down to the discharge end of the kiln we first encounter refractories in what we have come to call "feed-end blocks." Their purpose is to reduce the kiln diameter to a predetermined size to bring about certain draft conditions and also to form a dam to prevent the feed material from splashing or running out over the end of the kiln. Refractory feed-end blocks are frequently dispensed with in wet-process kilns, where generally the temperature at the end is so low that a refractory ring or dam is not called for and can be satisfactorily, and more permanently, built of steel. In dry-process kilns, however, we always find refractories right to the very feed end of the kiln. Except in the very few cases where the kiln shell has itself been given a sharp taper at the feed end, the ring is usually built of rather large special shapes.

Good mechanical strength and structural stability are the desirable characteristics refractory bricks should possess for this part of the lining. Good spall resistance is also a desirable feature, although cracking or breaking of feed-end blocks is more often the result of mechanical rather than thermal causes. These features all become more important as the size of the blocks used increases, because the larger the block the more difficult it is to manufacture with uniform density (which in turn affects structural sta-

*Presented before the Technical Committees, Portland Cement Association, September 19, 1944.

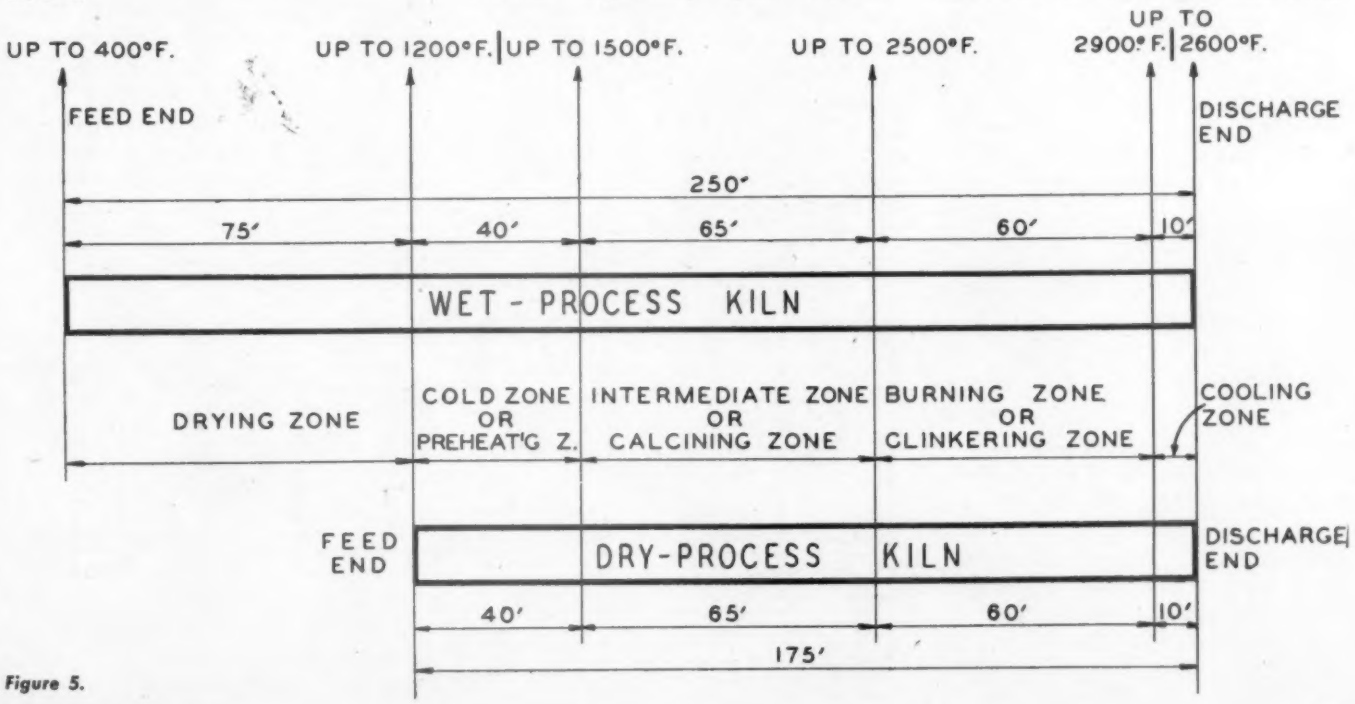


Figure 5.

bility and spall resistance; and good workmanship (which, if brick surfaces are warped, could easily result in line or point contact between adjacent bricks in the circle to cause mechanical cracking when the stresses or strains that come into play are concentrated on those points or lines of contact).

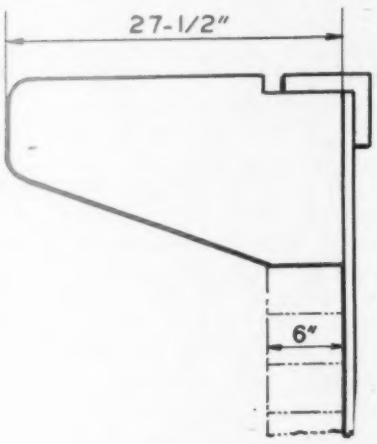


Figure 6.

How one cement plant overcame a troublesome feed-end nose-ring problem is illustrated in Figures 6 and 7. Figure 6 shows the design of the blocks formerly used and which would crack badly, necessitating frequent replacements. It will be noted that the block is a rather large one. Figure 7 shows the design now employed with excellent results. Here four much smaller blocks are used where formerly only one large one was used. Not only have the smaller blocks solved this plant's feed-end block problem but a complete ring made up of the smaller blocks represents lower first cost than a ring of the large blocks.

Several cement plants are benefiting from a change from large to smaller block assemblies. Some have done so simply by reducing the outside chord dimension, where the block is of a shape where such a change is practical. Others are building their feed-end rings using a combination of standard kiln liner shapes somewhat in the manner illustrated in Figure 8.

Drying Zone of Wet-Process Kilns.—Temperatures are low enough in this zone so that the refractoriness of the lining is not important. In kilns where only the wet load material is in contact with the lining a good grade of fire-clay brick of dense structure to resist penetration of moisture will be found satisfactory. However, many wet-process kilns are equipped with chain systems in the drying zone to serve as a means of heat transfer from the hot gas to the slurry. In such cases resistance to the scouring and rubbing brought about by the chains becomes a very important factor and requires an extremely hard dense brick lining.

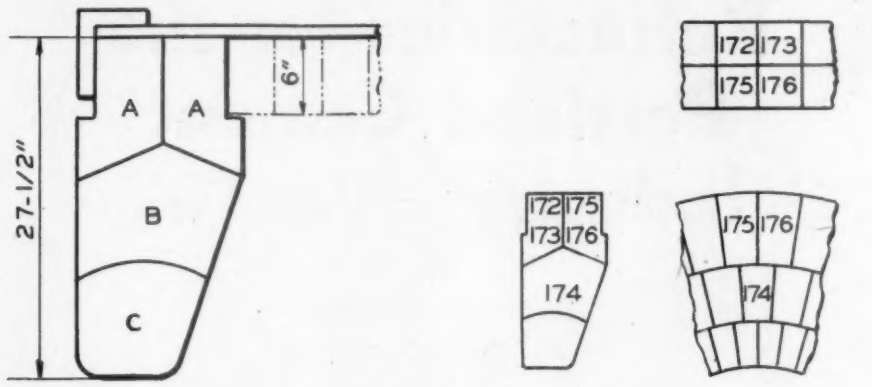


Figure 7.

Bricks specially prepared for this service are available.

Cold-Zone or Pre-Heating Zone.—In this zone, too, temperatures are low enough for any good fire-clay brick to withstand and abrasion is almost non-existent. In general it can be said that this zone presents the easiest refractory problem of all.

Intermediate Zone or Calcining Zone.—In this zone one frequently encounters really severe refractories problems. Here the temperature range from the cooler end to the hot end of the zone is very considerable, with the hot end reaching temperatures that call for high refractoriness in the lining. In addition the temperatures reached in this zone are high enough so that spall resistance in the refractory lining becomes a factor of major importance, particularly so in kilns subjected to intermittent service. A great deal of attention has been focused on this zone in recent years, during which time many kilns have been subjected to far more intermittent service than formerly, due not only to fluctuating demand for cement but also, and more lately, to "spread-the-work" schedules. Furthermore, if kilns are insulated between the refractory lining and kiln shell they are invariably insulated in the intermediate zone or calcining zone and this, too, adds to the refractories problem.

Much has been done to better refractory lining life in the intermediate zone and this will be referred to in detail later in the discussion.

Burning Zone or Calcincing Zone.—Refractory service conditions are generally most severe and lining replacements most extensive in this zone. Here the temperatures are very high, running up to 2,900 degrees F., and occasionally higher. Obviously, such high operating temperatures call for high-heat-duty refractories. Resistance to spalling is also a very important consideration in this zone to withstand the wide and rapid temperature fluctuations

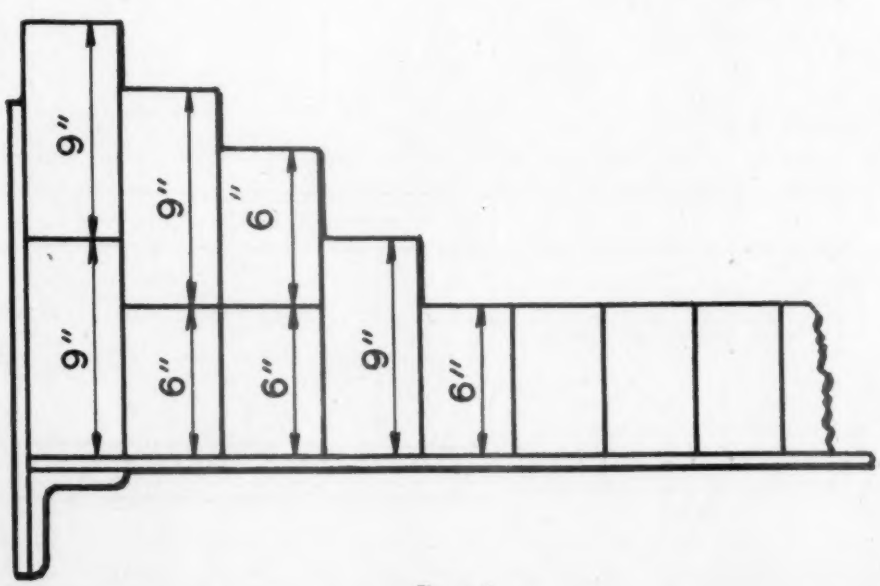


Figure 8.

during the starting up and shutting down of the kiln. Mechanical strength to withstand abrasion of clinker is also desirable. But all these consideraions are decidedly secondary to the property of the refractory's ability satisfactorily to pick up and maintain a protective clinker coating. Without protective clinker coating no refractory material now known will long withstand burning-zone service conditions presented by modern cement-manufacturing practice. This has been proved so widely true that it can be said the most desirable burning-zone lining is that refractory which, under the conditions it is subjected to will pick up suitable protective clinker coating with the greatest speed, maintain it most tenaciously, and suffer the least damage when the coating becomes dangerously thin or leaves the lining altogether.

The formation of protective clinker coating is dependent on a number of factors, including the kiln temperature, the composition of the load material, the composition and type of refractory used, the refactoriness of the lining material and, also, and extremely important, the effect (fusion or slagging) of the load material on the refractory at kiln temperature. These conditions vary so widely from plant to plant—sometimes in kilns in the same plant—that several different types of refractories are being used successfully. Named in their order of importance they are unburned (chemically-bonded) magnesite brick, high-alumina brick, and high-heat-duty fire-clay brick. The first-named are actually a combination of burned magnesite and chrome ore held together with a chemical binder, and are the preferred burning-zone lining refractory where kiln temperatures are very high and in those operations where it is either difficult or impossible to build up and satisfactorily retain protective clinker coating even on 70 per cent. high-alumina bricks. In many plants operating conditions are such that 70 per cent. alumina (Al_2O_3) bricks are quite satisfactory and economical to use. A few plants can satisfactorily use 60 per cent. or 50 per cent. alumina (Al_2O_3) bricks and there are also a few—but very few—where a good first-quality high-heat-duty fire-clay brick, of about 40 per cent. alumina (Al_2O_3), can be used to good advantage.

With so wide a range of products being used for burning-zone lining, the refractories problem becomes one of finding the grade or classification of refractory best suited to one's operating conditions. Much work has been done, and many data have been collected, by the refractories industry on this problem. It will be referred to in detail later in this discussion.

Cooling Zone.—The length of this zone varies in different kilns, dependent on the location of the burning zone as related to the discharge end of the kiln. A number of factors have a bearing on this, such as the kiln design (not only of the kiln itself, but also its relation to the kiln hood), as well as the fuel used and combustion control.

Ordinarily refractory service conditions are not severe in the cooling zone, although spalling is to be guarded against, as well as fusion of the refractory in the presence of clinker at operating temperatures. The refractory should also possess good resistance to clinker abrasion, inasmuch as protective clinker coating is seldom built up on the lining in this zone.

The developments in recent years to bring about certain desirable characteristics in the finished cement clinker, and to increase over-all cement-plant operating efficiencies, have been accompanied by a trend toward tight sealing of the kiln and kiln hood. This permits more definite combustion control, but at the same time also frequently results in higher temperatures than formerly were encountered at the discharge end of the kiln. In some instances the changes have brought about conditions so severe that the refractory problems in this zone are the same as those met with in the burning zone.

Discharge-End Blocks or Nose Blocks.—With few exceptions the last ring of bricks at the discharge end of the kiln is made up of what we have come to call "discharge-end blocks" or "nose blocks." These are usually bricks of special design to conform to the design of the metal construction at the end of the kiln, and which latter makes provision for a metal retaining ring. Bricks to be satisfactory in this service should possess high resistance to thermal and mechanical spalling, should be resistant to abrasion by the cement clinker as it passes over the bricks, and should be as small in size and as simple in design as is practical and permissible under fixed conditions.

(*To be continued*)

New Jersey (*from page* 130)

tosis, or unless the employee or someone on his behalf, or some of his dependents, or someone on their behalf, shall give the employer written notice that the employee has contracted a compensable disease, which notice to be effective must be given within three years and ninety days after his last injurious exposure to such disease in such employment, and also in case of death from silicosis or asbestosis unless written notice of such death shall be given to the employer within ninety days thereafter, no compensation shall be payable on account of the death or disability, as herein defined, of the employee caused by silicosis or asbestosis.

All claims for compensation for silicosis or asbestosis shall be forever barred unless a petition is filed in duplicate with the secretary of the workmen's compensation bureau, at the State House in Trenton, within one year from the date of disablement or death, as the case may be, or in case an agreement of compensation for silicosis or asbestosis has been made between such employer and such claimant, then within one year after the failure of the employer to make payment pursuant to the terms of such agreement; or in case a part of the compensation has been paid by such employer, then within one year after the last payment of compensation.

Whenever total disability, as herein defined, from silicosis or asbestosis occurs to any employee it shall be the duty of the employer promptly upon obtaining knowledge or notice thereof to at once report such disability in the manner specified in article six of chapter fifteen of Title 34 of the Revised Statutes; but nothing in such report shall be construed to amount to an admission of fact on the part of the employer of anything therein reported.

This act shall not apply to cases of silicosis or asbestosis in which the last injurious exposure to the hazards of such diseases occurred before the effective date of this act.

7. Any employer, employee, beneficiary or person feeling aggrieved by any decision of the workmen's compensation bureau affecting his interests under this act may appeal the same in the manner provided in sections 34:15-66, 34:15-66.1 and 34:15-67 of the Revised Statutes.

8. Except as otherwise provided in this act, the provisions of articles two to six, both inclusive, of chapter fifteen of Title 34 of the Revised Statutes applicable to workmen's compensation for injury or death by accident, including compulsory insurance, insurance carriers, and insurance rates, shall apply to employers, employees and insurance carriers subject to this act.

9. This act shall take effect on January first, one thousand nine hundred and forty-five.

Election of Ralph H. Cake to the board of directors of the Oregon Portland Cement Co., to fill the vacancy caused by the death of Arthur H. Devers, was announced recently in Portland by Frank E. McCaslin, president. The company operates plants at Oswego and Lime, Ore. The new board member also is president of the Equitable Savings & Loan Association in Portland and head of the law firm there of Cake, Jareguy & Tooze.

Quarry Blasting Problems Can Be Reduced Through Education

Besieged by complaints following protest in mid-western newspaper, big quarry operator keeps problem in limelight by giving first-hand facts and wins angry public's confidence.

By JULES E. JENKINS
Head of Vibration Engineers

another P and Q exclusive

THERE recently appeared in the local newspaper of a midwestern city an article written by one of its editors on the subject of quarry blasting. It so happens that the quarry industry is well represented in the vicinity of this town, small-medium- and large-scale operations being carried on all around its borders. The nature of the material mined does not require that large amounts of explosives be used; nevertheless, operators of these plants have been besieged with a mounting number of the usual run of claims for structural damage. This article was not headlined but it might as well have been, because it was tucked away in the "town topics" column and, somehow, keeping up with the local gossip seems to be "must" reading on the part of everybody.

It was interesting to note the reactions of several quarry operators to this news item. One shrugged his shoulders and remarked "If you are in the quarry business you have to expect complaints." Another became indignant and addressed a sharp letter of protest to the newspaper. In it he made the usual denials and offered good argument but, despite this, one could not help but feel that his letter contained a deep undertone of anger.

The larger institution was duly alarmed. It had much at stake. It has had to carry the burden of receiving and dealing with most of the complaints whether it was responsible for them or not. It gave employment to a large number of citizens and wanted to stay on a friendly basis with all the local people, authorities, organizations and particularly with some of the persons who complained the loudest. It proceeded with caution.

Now there was one thing about this article which seemed to escape every operator's notice and this was that the writer had no particular grudge against the quarries. He wrote the article because of its general public interest and privately admitted it came to his attention while he was bowling with a few friends and at the same time wondering what he was going to do to fill his next day's column. The surprising thing is that he gave voice to a kind of blasting complaint that has assumed a stereotyped pattern wherever blasting is carried on. It could be printed in any community in America where blasting is done and it would fit. Let's read it.

[Name of local city] property is being damaged to the extent of many thousands of dollars by "earthquake" blasting of quarry companies in this area.

It's time to call a halt to these supercharges of dynamite.

Townspeople have been patient and long-suffering on the blasting situation. It's a wonder they have not risen in mighty protest long before this.

Breaks in plaster of numerous homes and business places have developed and the impression prevails that the blasting is responsible. There have been reports of dishes being shaken from the walls. Cracks have occurred in walls of brick homes.

We have felt these shocks in our own home. One day recently the house shook, and we rushed to the basement thinking possibly the furnace had exploded. Residents of the neighborhood told of similar experiences. At first people thought the shaking of their homes was caused by an earthquake, but there were no official reports of earthquakes in this area.

We understand the [quarries] had promised to use lighter charges of dynamite, but the citizens have noticed no lessening of the violence of shocks.

We can understand that the [quarries] are in a hurry to get out their product to meet war-time demands, but there should be some consideration for the property owners. We have been told the same results could be obtained if a number of lighter charges were set off simultaneously instead of using one supercharge. We don't know whether this is true.

The fact remains that property owners have valid cause for complaint.

The [quarries] should do whatever is possible to remedy the situation.

Well, Mr. Quarry Man, how would you react to an article such as this in your local newspaper? This may not be your problem to-day, but it will be sooner or later and the question is: Are you ready for it?

We have said that this article would fit any place where blasting is a part of the local picture. Let's take it apart and reduce it to its fundamental complaints. The writer could have said:

These supercharges the local quarries are using are causing earthquakes which result in costly damage to our homes and it's time to call a halt.

Plaster cracks, masonry cracks, and broken dishes have been caused by these blasts and the quarries promise and promise, but don't do anything about it.

You can't tell me they can use lighter charges. I know because I live on a rock vein and every time they shoot off one of those whoppers, I think the house is coming down. Why, it's just like an earthquake.

Yes, I know they are doing war work and we have got to get the stuff out, but they don't have to wreck everybody doing it. I'm not looking for anything, but I don't want to fix my place up and have them come along and knock it down. I tell you they've got to do something about it. Everybody is complaining. You ought to see Blank's house, (etc.).

And so the story goes. Sooner or later the quarry industry will come to realize that the only manner in which to combat this complaint factor is public education. It is not enough to know that scientific research has demonstrated that quarry blasting is not capable of doing the things the public thinks it does. Too many quarry men are inclined to let the matter rest until they are confronted with costly litigation, then frantically seek the answer to their problem in works and findings that have been determined somewhere else. They apply these findings to their own operations on a hit-or-miss basis and hope against hope the courts will look kindly upon their defense.

Getting back to the local situation referred to, the bigger quarry was in a quandary. It finally decided to undertake a public-education program. Instead of berating the editor, it publicly complimented him for his zeal in bringing this important matter into the limelight. It did not want the public to walk in the darkness. It wanted people to know and was anxious that they should have a first-hand picture of what the quarries were doing about it.

Every day the public handles untold quantities of death-dealing agents, quite carelessly too, with never a thought about their potential danger. Up in the morning in a rush to make the office on time, does the fellow whose home is being shaken to pieces think about the electric razor he is using and what would happen to him if by chance a defective connection should come into contact with the water he is using? Does milady think of the potential dangers of gas when she

cooks the evening meal? No; people have come to take for granted that man has harnessed these forces so that they are relatively safe for daily use.

Dynamite! Mention dynamite to these same persons and at once it becomes a thing apart—something not understood—something to be feared. Yes, the quarries welcomed an opportunity to tell their story—to tell the story of dynamite—what it is, how it acts, *and how the quarries know that seismic disturbances do not cause the damage to buildings it is charged with.*

Moving pictures were furnished to show blasts employing tons of explosives—the whole process of how the blast was prepared, how the holes were drilled and bailed, how the dynamite was loaded particularly, how in some cases it was *dropped* into the hole, finally the shot itself, and, so they would not forget it, the picture was run backwards so the displaced material assumed its pre-shot position, and the blast was shown for the second time. These were compared with pictures of local shots, and, while these pictures were being shown, prearranged shots were discharged at all the quarries in town with the result that not one of those present was aware of the blasts having been made. They were told of this afterwards and professed amazement. Following the picture a lecture was given on the subject of seismic disturbances—not a highly technical discussion but a simple everyday-language talk. Questions and answers followed, and, by the simple process of getting a chance to talk directly to many people, the quarry company's representatives were able to demonstrate that it was they who knew all about the things that happen and not the people. They did not tell them that in so many words; the people knew it from what they had seen.

It is a funny thing but since we started the business of measuring quarry blasts nine years ago, the great majority of our work is that of public relations rather than the investigations of technical details. Any up-to-the-minute quarry operator will have his quarry seismic-surveyed just as he has his land surveyed. He will not cast the costly research work of men like Rockwell, Schnelling, Leet or that of the United States Bureau of Mines into the discard. They have given him the formulas with which to work, he must apply these formulas to his own diggings and be prepared to say, "Yes, Mr. Jones, we knew you were going to have a complaint, you and all the neighbors around here. So, just to know for ourselves and so that we could tell you when you did get around to making it, we had a seismic-survey of our operations and can tell you exactly what effects our blasts are having on your place."

Knowledge is power. When quarry men realize that complaint is a part of the business that can not be ignored and set out to meet the issue with a campaign of public education of the scientific findings that are available to them, complaints will cease to be a problem.

Haulage (*from page* 134)

ESTIMATED HOURLY EXPENSE OF OWNERSHIP AND OPERATION OF ONE "SEMI" TRUCK

Data:		
Approximate cost of complete "semi" tractor and trailer	$13,000	
Approximate cost of complete set of tires and tubes, to be set up as an operating account	$ 2,700	
Valuation of truck for figuring depreciation	$10,300	
Depreciation period, 6 years of about 1,667 hours each; *hours*	10,000	
Fixed Charges:		
a. Interest, taxes, insurance, storage, at 10 per cent. of average investment of $7,700 per year of 1,667 hours	$ 0.46	
b. Depreciation, straight-line method with no allowance for salvage	1.03	
	$ 1.49	
Operating Expenses:		
c. Mechanical repairs, replacements, and labor thereto	$ 0.70	
d. Tires and tubes, complete set every 2,500 hours or about every 35,000 miles	1.08	
e. Gasoline, 9 gallons at 9 cents	.81	
f. Crankcase oil, 0.1 gallon at 60 cents	.06	
g. Grease and greasing labor	.12	
h. Driver and compensation	1.00	
	$ 3.77	
Total hourly expense for ownership and operation of one truck	$ 5.26	
Unit Costs:		
Per ton of coal hauled on 3.5-mile, one-way distance	$ 09.7	
Per ton-mile of coal hauled	2.8	

The ton-mile unit cost is an excellent low-cost figure, influenced by a long well-maintained haul road and moderate grade conditions. It will be noted that the engine horsepower is particularly high because of the operator's anticipation of a long steady pull.

Acknowledgement. — The writer wishes to thank the following men for data which have been part of these articles:

H. Y. Murphy, engineer, Lake Erie Limestone Company, Hillsville, Pennsylvania.

P. S. Gray, superintendent, Cuyuna Ore Company, Ironton, Minnesota.

C. A. Lindberg, superintendent, Oliver Iron Mining Company, Duluth, Minnesota.

H. H. Angst, superintendent, Phelps Dodge Corporation, Ajo, Arizona.

T. H. Latimer, engineer, United Electric Coal Company, Chicago, Illinois.

W. J. Worthy, Superintendent, Medusa Portland Cement Company, Cleveland, Ohio.

J. L. Glick, president, Truck Engineering Company, Cleveland, Ohio.

W. GIBSON CAREY, JR., president of the Yale & Towne Manufacturing Co., has recently been elected to posts in several national industrial organizations. Mr. Carey was elected president of the China - American Council of Commerce and Industry, to succeed Richard C. Patterson, Jr., who was recently appointed U. S. Ambassador to Yugoslavia. He is also chairman of the Executive Committee. The Committee for Economic Development also elected Mr. Carey chairman of the C.E.D. Finance Committee.

Lima Locomotive Works, Incorporated, Lima, Ohio, announce the appointing of eight new distributors for Lima shovels, draglines and cranes.

Held - McCoy Machinery Company, 3201 Brighton Blvd., Denver 5, Colorado, for the state of Colorado; Contractors' Equipment and Supply Company with offices at Springer Building, Albuquerque, New Mexico, and Stanton Street, El Paso, Texas, New Mexico and Western Texas; Interstate Machinery and Supply Company, 1006-10 Douglas Street, Omaha 2, Nebraska, Nebraska and Western Iowa; Waterloo Construction Company, 524 Park Road, Waterloo, Iowa, Eastern Iowa; Phillippi-Murphy Equipment Company, 360 Hoover Street, N. E., Minneapolis 13, Minnesota, part of Minnesota and Northwestern Wisconsin; Smith Commercial Body Works, Incorporated, 1620 First Avenue North, Fargo, North Dakota, Northeastern Montana, Northwestern Minnesota and the state of North Dakota.

At present almost the entire output of Lima shovels, cranes and draglines is going to the armed forces. Future plans call for a complete line of excavators and material handling cranes ranging in size from ¾ cubic yard to 5 cubic yards for shovels and 13 tons to 100 tons capacity for cranes.

North American Cement Corporation Revises Quarry and Crusher Layout

One of a series in an improvement program, the construction of a larger silo in 1943 eliminated a major stone storage bottleneck between the quarry and the plant.

By W. E. TRAUFFER

• **Left—The new 1,500-ton stone storage silo with the old 500-ton silo and crusher buildings in background.**
Right—Conveyor to secondary crusher with suspended magnet. In background are the tertiary crusher building and silo, in the distance the cement plant.

another ON THE SPOT report

When the North American Cement Corporation in August 1942 discontinued operations in the quarry which had supplied the stone for its Catskill, New York, cement plant since 1930 it was decided at the same time to begin a series of other improvements which had long been contemplated. These included the replacement of quarry locomotives and cars with Easton truck-trailers, a new hammer-mill secondary crusher, and the construction of an adequate storage silo for the finished mill-feed stone. This silo was completed in April, 1943 and eliminated a major bottleneck between the quarry and plant. All that remains now to complete the improvement program in this part of the plant is the installation of two new dust collectors, which are on order, to supplement the one now in use.

The stone used in this plant has always been a blend of two types—Manlius limestone which is low in iron, and Beecraft which is high in iron. In the old quarry these two types were in adjoining tipped strata which were quarried separately. Two separate quarries were then opened, one to supply each type of stone, and these are operated alternately, with the final blending, as before, being done at the cement plant. Standard drilling, blasting and loading procedure is followed in both quarries.

The conveyor system from the tertiary crusher building to the new silo.

The Manlius quarry is 4,000 feet from the primary crusher and the haul is nearly level. The Beecraft quarry is 3,500 feet away with a fairly level haul except near the quarry. There the road out of the quarry has a 3.2 per cent. grade for about 600 feet, a fairly steep grade even for modern haulage equipment. As this quarry is expanded it will be possible to reduce this grade considerably.

The hauling equipment consists of four Eastern TR10 side-dump trailers which haul 16-ton loads. These are hauled by Mack truck-tractors. Only three of these units are used at a time, the other serving as a spare. With this system about 1,600 tons of stone is hauled in an 8-hour day, about the same tonnage formerly obtained with two 26-ton locomotives each hauling four 16-ton cars.

The trailers have outriggers on either side so that they can come in to the crusher from either direction. The dumping is done by an Easton elbow-type hook dumping mechanism which is operated by a hoist.

(*Continued on page* 142)

Directors of Industrial Sand Association Meet in Chicago

MORE than thirty representatives of industrial-sand producing companies attended the mid-year meeting of the board of directors of the National Industrial Sand Association held at the Palmer House, Chicago, November 17. Those present accounted for the majority of the members of the association as well as the great majority of the industry's production capacity.

T. C. Waters, the association's counsel in the field of silicosis, gave a long and interesting report on developments in legislation and public policy affecting this hazard to the health of workmen engaged in the industry, as well as some of the preventive and curative methods that have been proposed and used.

Information about the possibility of shortages in the supplies of box, open-top and hopper cars was presented by Executive Secretary Ahearn, who read letters from railroad men who are students of the situation. The supply of box cars is reported to be "tight" everywhere, and is especially acute with regard to cars that are high-grade. The grain crops, which require cars of this type, have been considerably larger than usual and this fact, coupled with exceptional movements in certain areas, have been responsible for much of the shortage. The situation with respect to open-top cars is similar, although no serious shortage is expected to occur. The supply of hopper cars should hold up, even though coal production, which has reached an all-time "high", will continue at recent levels.

Mr. Ahearn read a letter-report from Mr. Collins, the association's counsel in the field of freight rates, in which the history of the association's activities before the Interstate Commerce Commission was dealt with. He outlined the reasons why the association had decided not to participate in the hearing before the I. C. C. in October in Ex Parte 148, which considered freight-rate increases scheduled to become effective January 1, 1945. The association's attitude with respect to proposed increases affecting industrial sands has been opposed to percentage charges and in favor of flat adjustments.

Stanton Walker, the association's consulting engineer, told of the work that had been done toward the preparation of a manual of safe practices in the control of dust in abrasive blasting. He presented to the board members a joint memorandum, prepared by himself and W. C. L. Henien, ventilation engineer of the Industrial Hygiene Foundation, which suggested the appointment of a committee to serve as a policy-making body and the preparation of a draft of the proposed manual. It was recommended that the manual—a post-war project—should provide information on the safe control of dust in abrasive blasting, discussing (a) respiratory protection (helmets and air supply); (b) general protection (design and construction of blast rooms, etc.); and (c) dust collectors (their design, capacity and maintenance). The officers of the association will appoint a policy-making committee for the development of a program.

Mr. Walker called his listeners' attention to two booklets issued by the National Founders' Association: one known as Manual Number 2 on Core Making and another, Manual Number 4, dealing with Cleaning of Castings, and the board decided that the information contained in them should be made available to the membership.

A. Warsaw, president of the Wedron Silica Company, reported on the work of his committee charged with studying proposals for the reporting of production data to the United States Bureau of Mines. Association members will be asked for their opinions.

The report of the Special Advisory Committee on strength tests for bonded molding sands was read by the committee's chairman, C. Mathiesen, Albany manager, Whitehead Brothers Company. The opinion was expressed that the American Foundry Association clay-content tests undoubtedly provide the information they were designed to furnish, but that they are difficult to make in the average plant laboratory. The fineness test, it was said, is affected by differences in the waters used and even by differences in the acidity of waters distilled in the laboratory.

Mr. Ahearn took a poll of those present on the man-power situation as it exists in different parts of the country. The results are summarized below:

Illinois.—In the Chicago area one producer reported the man-power shortage as acute. Outside the Chicago area one producer reported his organization 40 per cent. short of the number of men needed and the efficiency of individual workers reduced by as much as 25 per cent. Some 16-year-old boys are being used in the farming areas. Another Illinois producer reported a large amount of absenteeism and the refusal on the part of some workers to labor more than 5 days a week. One plant in central Illinois lost 60 men although it has a B rating.

Ohio.—There is said to be no man-power shortage problem in Cleveland although the situation is serious outside that city. Italian seamen, unused to hard work, have not proved satisfactory and absenteeism has been high. The employment competition offered by the rubber plants in Akron has been impossible to overcome. One producer reported enough men available for two plants, but an insufficient supply for two plants in Cleveland. One plant is operating with but a single shift instead of two shifts. One of the plants has an A rating. In southern Ohio the situation was reported as fairly good, but in northern Ohio it is bad at times. One producer reported employing a woman to operate a dragline and two women—farmers' wives—to feed hoppers.

Michigan.—No shortage of labor was reported for the Detroit area.

New York.—In New York State the situation was reported as getting worse.

Indiana.—In the southern part of the state the situation is "not very good" but there is no actual shortage.

New Jersey.—One producer told of his experience in employing women, but found the practice unsatisfactory because of excessive conversation between the women and the men and reduced output from both. In southern New Jersey there have been enough men but it has been necessary at times to close one producer's plant for several days, because of the temporary unavailability of workers.

West Virginia.—A 20 per cent. shortage of labor was reported by one producer in West Virginia.

Wisconsin.—There is a shortage of man-power in this state and it is impossible to compete in wage rates with the factories.

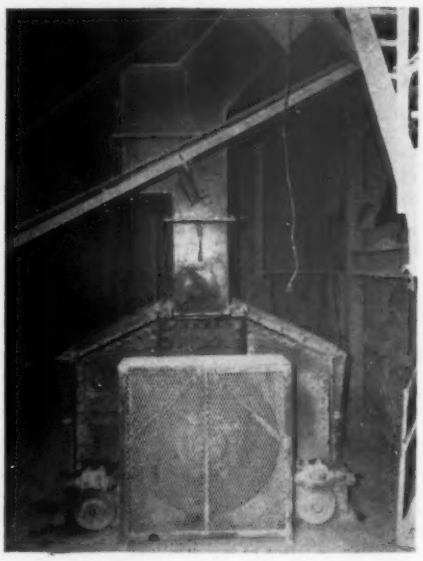
Mr. Ahearn reminded his listeners of the provisions of Executive Order 9240 governing the payment of overtime premiums. Some workers have claimed that holidays on which they did not work should be counted as 8 hours each in computing the 40 hours beyond which overtime became payable, but Mr. Ahearn explained that this is neither permitted nor required by the order. The order provides for double-time payment on the seventh consecutive day in any work week and if this seventh day should fall on one of the six holidays designated in the order as covered by the time-and-one-half rate, the worker must be paid the double-time rate, this being the higher of the two rates. The order was designed to prohibit work on the seventh consecutive day and for that reason the premium overtime rate is high.

The following members and guests were present:

Hamilton Allport, Standard Silica Corp., Chicago.
E. T. Andrews, Pennsylvania Glass Sand Co., Lewistown, Pa.
J. S. Cable, Minnesota Mining & Manufacturing Co., Akron, O.
Jack Cleary, Sand Products Corp., Cleveland.
John A. Cronenweth, Great Lakes Foundry Sand Co., Detroit.
Clayton F. Devine, Silica Sand Traffic Association of Illinois, Chicago.
E. M. Durstine, Keener Sand & Clay Co., Columbus, O.
A. N. Farmer, Sand Products Corp., Cleveland.
Sterling Farmer, Sand Products Corp., Cleveland.
P. G. Foreman, Industrial Silica Corp., Youngstown, O.
A. Y. Gregory, Whithead Bros. Co., New York.
C. M. Hardy, Houghland & Hardy, Inc., Evansville, Ind.
Miss E. J. Hartmann, George W. Bryant Core Sands, McConnellsville, N. Y.
Russel G. Hay, Ayers Mineral Co., Youngstown, O.
Dwight E. Manley, Manley Sand Co., Rockton, Ill.
Lyle T. Manley, Manley Sand Co., Rockton, Ill.
C. Mathiesen, Whitehead Bros. Co., Albany, N. Y.
T. C. Matthews, Pennsylvania Glass Sand Corp., Lewistown, Pa.
Wm. J. Muhlitner, Great Lakes Foundry Sand Co., Detroit.
Bror Nordberg, *Rock Products*, Chicago.
P. W. Palmer, Browntown Silica Co., Browntown, Wis.
George Pettinos, Jr., George F. Pettinos, Inc., Philadelphia.
Stanley A. Phillips, PIT AND QUARRY, Chicago.
John F. Putnam, National Silica Co., Oregon, Ill.
Nathan C. Rockwood, *Rock Products*, Chicago.
Arthur B. Schlesinger, New Jersey Pulverizing Co., New York.
E. O. Schneider, Ottawa Silica Co., Ottawa, Ill.
Wm. Sherrath, South Jersey Sand Co., Dividing Creek, N. J.
Harry F. Spier, New Jersey Pulverizing Co., New York.
J. M. Strouss, Deckers Creek Sand Co., Morgantown, W. Va.
George A. Thornton, Ottawa Silica Co., Ottawa, Ill.
Stanton Walker, National Industrial Sand Association, Washington, D. C.
A. Warsaw, Wedron Silica Co., Chicago.
T. C. Waters, Baltimore.
C. Franklin Wolf, New Jersey Silica Sand Co., Millville, N. J.

North American (*from page 140*)

The Allis-Chalmers Gates 24K (48-inch) gyratory primary crusher reduces the stone to 6-inch size and under. The stone is discharged on

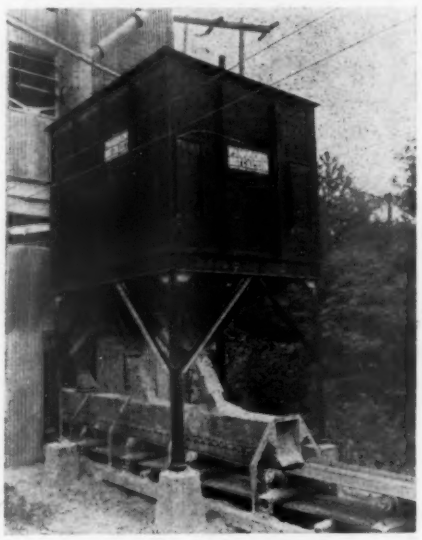


The new reversible secondary-reduction hammer-mill.

a 42-inch by 110-foot horizontal belt-conveyor which carries it to the secondary-crushing building. A Cleveland suspended magnet over the discharge end of this conveyor removes any tramp iron in the stone.

From this conveyor the stone is discharged through a chute with a stone box into the new Pennsylvania C-15-48 hammermill secondary crusher. This machine is reversible and is driven in opposite directions on alternate days to get even wear on both sides of the hammers and maximum life. This machine is being driven temporarily by a 400-horsepower General Electric slip-ring induction motor which drove the smaller mill it replaced but this will be replaced by the recommended 500-horsepower motor as soon as it can be obtained.

The minus-2½-inch stone from this crusher drops on a 26-inch by 200-foot belt-conveyor which is slightly inclined and carries it under U. S. Highway No. 9W to the tertiary-crushing building. There the stone is discharged on a 5- by 12-foot Tyler Ty-Rock doubledeck screen which is fully enclosed. This is equipped with Tyler Ton-Cap slotted cloth. The minus-⅜-inch stone passing through the bottom



The dust collector at the tertiary crusher building.

deck of this screen is finished feed for the raw-grinding mills. The material passing over both decks drops into a No. 7 Williams hammer-mill for reduction to the same size. This machine is driven by a 100-horsepower motor. A 26-inch by 205-foot horizontal belt-conveyor carries the screen and crusher products over a double-track railroad to the old 500-ton car-loading silo which is on a switchback from the plant service track. This silo is now used only for stone to be used on the roads or for other similar purposes. The cement rock is discharged from this conveyor on a new 27-inch by 110-foot Jeffrey belt-conveyor which carries the stone up a 17-degree incline to the new storage silo. It is a reinforced-concrete silo with a capacity of 1,500 tons of which 1,350 tons is live storage. It has sufficient clearance for the yard locomotives and cars on two tracks are loaded through four lever-operated clamshell gates. The gate levers are operated by the train brakemen from platforms on each side. The use of this large silo has eliminated the frequent delays in quarry operation which formerly resulted when there was any delay in hauling stone from the old silo.

The final crushing building is kept dustless by a Pangborn collector which discharges the collected dust on the same conveyor as the Williams mill. The two collectors on order will be installed at the primary and secondary crusher buildings.

New Machinery, Equipment and Supplies . . . 1944

● Full-floating Screen

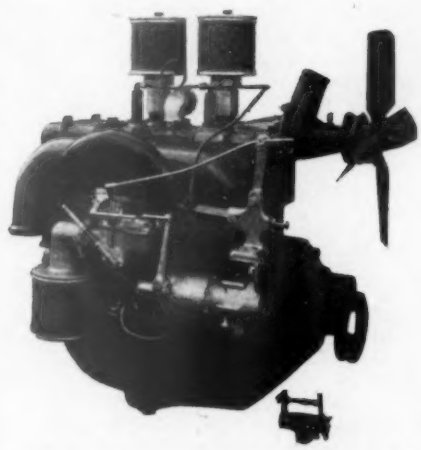
The Iowa Manufacturing Company, of Cedar Rapids, Iowa, now has on the market a horizontal vibrating screen for stationary and portable gravel plants, trade-marked with the "Cedarapids" name and consistent in design and construction with the other equipment bearing that name. Its construction allows the piling on of material without injury to the screen cloth, which means faster yield per hour, or in other words, more capacity. The ease and simplicity of installing a new section of screen cloth or rearranging the combination of sizes, and the fact that this type of screen saves headroom, is an obvious advantage both in working and in transporting, enter into the situation in favor of the new screen. They are available in a variety of sizes, single, double, or triple deck.

● Gasoline Drill

The Syntron Company, Homer City, Pennsylvania, announces a new style, completely self-contained, gasoline hammer paving breaker type of demolition tool. In principle, it consists of a 2-cycle gasoline engine in an inverted position—with two pistons, one an engine piston and one a hammer piston. The engine piston is connected to the crankshaft at the top of the hammer and drives the flywheel ignition magneto, and a fan for forced air cooling. Starting is by a rope pull, the same as any outboard engine. Fuel (gasoline mixed with oil) consumption is relatively low—the hammer being equipped with a fuel tank having a capacity sufficient for several hours operation.

● Portable Compressor Unit

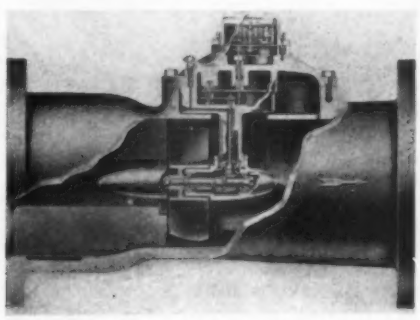
Since Gordon Smith & Company, Bowling Green, Kentucky, began manufacturing their line of motor-compressors converted from 4-cylinder Ford engines in 1935, they have sold more than 3,500 of these units to industrial users, including many quarry plants.



Ford engine after conversion to complete compressor.

The concern utilizes the Ford engine in producing a self-driven compressor of 60-c.f.m. air capacity, two of the cylinders operating in the conventional manner to supply power, the remaining two operating as air compressors. Among the advantages of these compressors, the company reports, are low initial and operating cost (an average of 1 gallon of gasoline per hour), and the availability of repairs and parts at Ford garages. Used parts are readily found also at automobile-wreck lots.

● Flow Meter



Builders-Providence, Inc., division of Builders Iron Foundry, has announced a new propeller-type flow meter for main line metering with many improvements, including streamline Venturi construction. This unit, called a Propeloflo meter, has an 8-blade bakelite propeller molded in one piece. Rotation is transmitted through spur and bevel gears. Shafts rotating in ball bearings assure maximum power to drive indicating and recording devices or proportioning chemical feeders. A Venturi throat evenly distributes the force of the flow against the full area of the propeller, resulting in improved accuracy throughout an exceptionally wide range of flow. Spiral flow is eliminated by straightening vanes just upstream of the propeller.

The propeller hub, bracket and nose are streamlined to reduce flow disturbance and divert fine grit, sand or scale away from the mechanism. Engineers will find the unit easy to service, it is said, owing to its "one-shot" lubrication system, the readily accessible stuffing box, and the ease with which the propeller mechanism may be removed from the line for inspection. A blank cover may be installed when the meter is removed.

● Oxygen Recorder

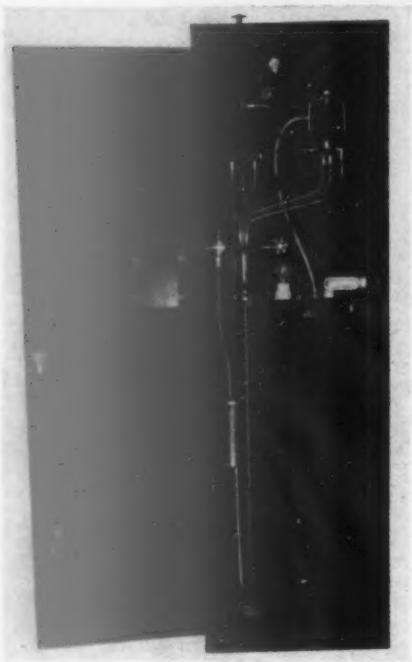


Figure 1.

The Cambridge Oxygen Recorder has been used in the field for a number of years to insure efficient combustion conditions in cement kiln operation. The meter panel, shown in Figure 1, consists of the meter, furnace, combined bubbler and aspirator, and power pack. The aspirator draws the gas from the kiln through the filter into the bubbler, which washes the gas and separates it into two streams, maintaining the smaller at a constant flow and passing it through

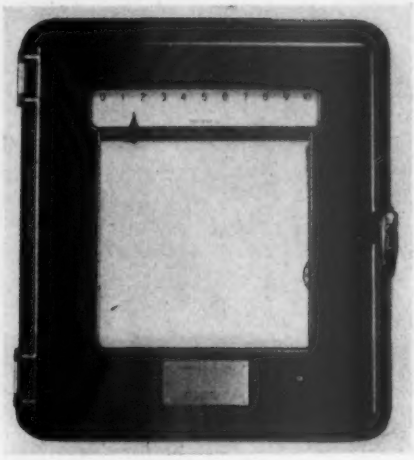
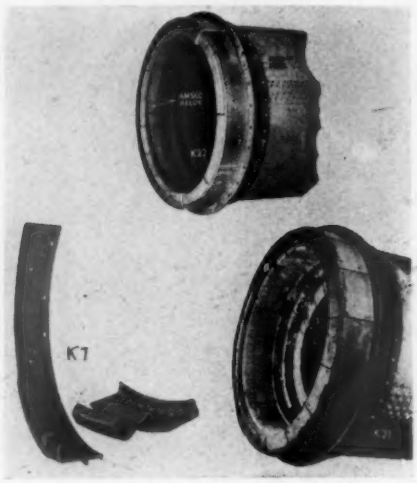


Figure 2.

the meter and furnace. The value of this flow is determined by an orifice placed in the front of the furnace. The main gas flow goes directly to waste down the aspirator. The galvanometer of the recorder shown in Figure 2, is connected to the two wires in such a way that its deflection is a measure of the difference of their temperatures and, therefore, of the difference in composition between the gases in the two cells. Maintenance requirements are mainly limited to the usual recorder routine, inspecting the water supply to the aspirator, and daily ramming of the sampling tube. The carbon rods in the furnace will last about two weeks and can be readily replenished. The recorder can be located any desired distance from the meter panel. The chart width is 10 inches and the speed 1 inch per hour. The standard range of the instrument is 0 to 5 per cent. oxygen. The accuracy of calibration is within 0.1 per cent. oxygen.

● Segmented Shield

To aid in keeping nose ring segments on rotary kilns at lower operating temperatures and thereby increase their load-carrying strength, a segmental shield has been devised by Amsco engineers (U. S. Patent 2,321,217) which fits over the nose ring segments as shown (K7). In the particular kiln-end design shown, the nose ring or inner segments are bolted to the kiln shell



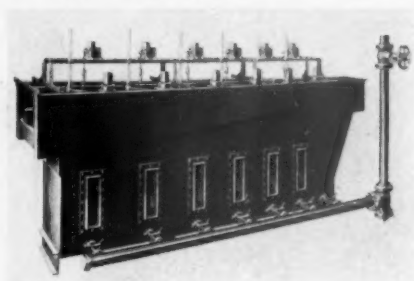
and space has been left between each piece to allow it to expand independently without enlarging the diameter. The bricked-in kiln end is pictured (K21) with only the segmental shield showing. Partly shielded kiln end is also shown (K22). Complete information on the new ringshields and segmental kiln ends will be sent on application to the American Manganese Steel Division of American Brake Shoe Company, Chicago Heights, Illinois.

● Lift-Truck

A new type of lift truck for concrete-products plants is the PowerOx, developed by the Barrett-Cravens Company, Chicago. This new unit combines the advantages of the hand-operated and power-operated lift-truck in this manner: With the PowerOx, loads are lifted by a series of vertical handle strokes. When the load is raised to the desired height, electric power is transmitted to the two rear drive wheels by means of a simple "twist of the wrists"—one way to

back up, the other way to move forward. There's no lost motion. Hands remain on handles to lift the load and to propel the truck. The PowerOx has a carrying capacity of 4,000 pounds and is available in widths of 19 and 25 inches, in platform lengths of 48 or 60 inches, and lowered heights of 7, 9 or 11 inches. There are two drive motors, one on each rear wheel.

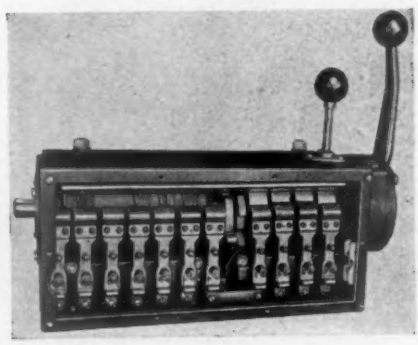
● Hydraulic Classifier



Developed to fully utilize the principles of hindered settling classification, the Dorrco Hydrosizer, a product of The Dorr Company, New York, provides fully automatic control of a sensitivity claimed never before to have been approached in a hydraulic classifier. It is a completely automatic unit, continuous in operation, and capable of producing a number of sharply classified products from a feed composed of 4 mesh and finer particles. Separation is effected due to differences in the specific gravity or particle size of the material to be treated, or a combination of both. Feed is introduced at the narrow end of the machine into a feed compartment where preliminary sorting occurs. When the unit is adjusted, the discharge mechanisms in each compartment reach a balance determined by the hydrostatic pressure at which the Valve Motor Control has been set. To date, the Dorrco Hydrosizer has been successfully applied to the preparation of table feed and specification sand and in the concentration of phosphate rock, iron ore and chromite.

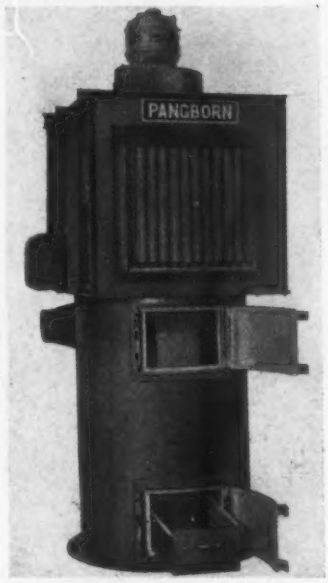
● Reversing Controller

Improved economy in current consumption is indicated as the significant feature of the new M-79 simplified four-speed reversing controller for electric and gas-electric trucks manufactured by the Elwell-Parker Electric Company, Cleveland. Experience in operation under war conditions has shown that when motor current is restricted by intro-



ducing resistance on first, second and third speeds, a wasteful amount of current can be consumed by running the truck for protracted periods on any of these three speeds. The major portion of this possible waste of current is prevented by the M-79 Controller, which uses resistance on the first speed only.

● Dust Collector



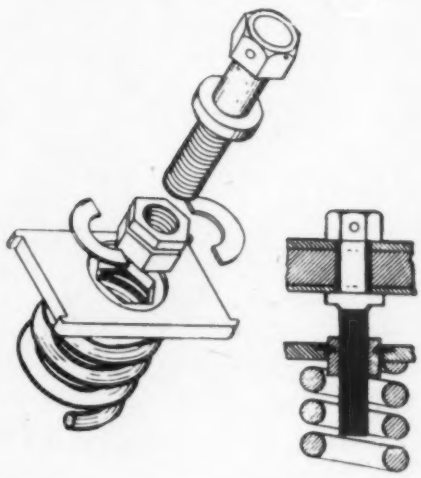
The new Pangborn industrial type "CK" unit dust-collector is designed for smaller air-volume dust-control problems where a self-contained unit is indicated. The unit consists of two major sections—a preliminary centrifugal section and a secondary cloth-screen section. Dust-laden air enters the centrifugal section where the bulk of the entrained material is separated from the air stream. The air, containing only the finely-divided dust particles, then flows upward to the secondary cloth-screen section where the fine dust is effectively filtered from the air. The unit is supplied in three sizes—1,000, 2,000 and 3,000 c.f.m. It is manufactured by the Pangborn Corporation, Hagerstown, Maryland.

● Apron Feeder

The Pioneer Engineering Works, Inc. of Minneapolis has been authorized by the Kensington Steel Company of Chicago to build the Oro manganese-steel apron-feeder. All wearing parts, including pans, rollers, chain bushings, and sprocket teeth are of manganese steel. The sprockets on both head and tail shafts are built with reversible and renewable teeth made of Oro manganese steel. They can be easily reversed and replaced without removing the sprocket centers from the shaft or disconnecting the pans. Sizes range from 30 to 60 inches wide. Lengths vary from 6 to 25 feet, depending on the installation. The pitch of the pans is 6 and 9 inches on the smaller feeders, and 12 and 15 inches on the larger feeders.

● Shear Plates

Recently devised emergency shear plates, quickly replaceable, are a safety improvement against roll breakage on aggregate crushers made by the Iowa Manufacturing Company, Cedar Rapids, Iowa. Under ideal working conditions, heavy helical springs of chrome vanadium steel maintain proper tension on the floating roll and keep the opening for material constant; yet when uncrushable foreign material is introduced the springs protect the roll by relieving the undue stress and prevent breakage. Any large piece of uncrushable material, such as tramp iron, would cause the nut, slotted for and holding the shear plate on the end of the adjustable screw bolt to shear the plate and allow the unrestrained bolt to pass through the spring and instantly release all tension on the floating roll. To resume operation it is only necessary to replace the shear plates. Extra plates are furnished with each crusher.



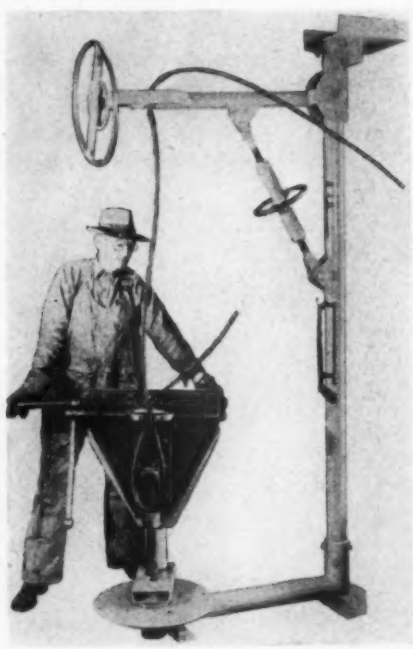
● Hose Clamp

The new Punch-Lok hose clamp, available from ¾ to 48 inches in diameter is a mechanical device for connecting various kinds of male and female fittings, special nipples, menders or ordinary pipe to hose. Punch-Lok hose clamps and fittings have been engineered to make application possible without iniury to the hose itself, and the manufacturer states that, once the clamp has been locked, neither vibration or rough handling can loosen it. For prices and descriptive catalog write Punch-Lok Company, Chicago.

● Dozer Control Unit

A new power control unit auxiliary drum for use with the D4 Towing Winch made exclusively for the "Caterpillar" D4 tractor. While especially designed as a bulldozer power control unit, the new auxiliary drum provides many additional hoisting and towing services with the "Caterpillar" D4 or R4 tractor. Simple, quick acting and with only one fabricating fitting it presents no service problem. The single control lever is conveniently located alongside the driver, offering finger-tip response for lifting or lowering the blade. Driving mechanism requires no lubrication attention, being taken care of entirely from the winch transmission. The D4 PCU auxiliary drum and D4 towing winch, when combined as one unit fulfills all requirements for bulldozer operation—plus heavy duty towing and multiple hoisting services. Manufactured by The Hyster Company, Portland, Oregon. A descriptive folder on this unit is available.

● Cable Splicer



Garlinghouse Brothers of Los Angeles, California, have recently announced the addition to their line of the new Gar-Bro cable splicing rig, a structurally self-contained unit designed to facilitate all the necessary operations in the splicing of cable. The machine may be used either as a portable or as a permanent installation, and has an over-all size, set up, of 96 inches by 45 inches.

● Portable Highway Batching Plant

Long hauls of mixed concrete by the mixing equipment are eliminated by a complete highway portable batching plant, being built by the C. S. Johnson Company, Champaign, Illinois. This unit, according to the manufacturer, can be towed behind a truck to the most advantageous point in the pouring area, and is quickly set up for operation. A unique feature of the Porto-Batcher is the charging skip. This charging skip has a capacity of 43 cubic feet . . . 33 cubic feet for aggregate and 10 cubic feet for cement. The aggregate from the three storage compartments reaches the skip through three fill valves. The cement and each size aggregate is weighed on a separate weight beam. The cement compartment is completely sealed to avoid contact of the cement with wet aggregate.

● MobiLoader

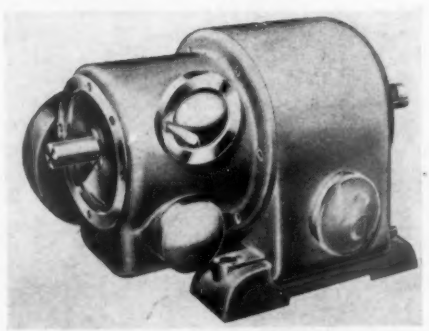
Four cubic yard trucks are loaded in slightly less than two minutes with bauxite ore on operations near Abbeville, Alabama with the Athey W4-1 MobiLoader. This tractor loader has 1⅛-cubic yards bucket capacity and uses the overhead loading method, digging its load at the front and discharging the material overhead at the rear.

● New Type Slurry Pump

The Morris Machine Works has recently developed a vertical close-coupled slurry pump in most of the standard sizes from 1½ inches Type S to 6 inches Type S. This pump will handle mixtures of abrasive solids and liquids as efficiently as our standard line of horizontal slurry pumps. This pump has exactly the same hydraulic passages as are found in the company's regular line of horizontal pumps. The impeller has a smooth easy entrance and is designed for the smoothest possible flow of the abrasives through the pump. Its pressure-balance design minimizes circulation of the solids from the shell passages to the eye of the impellers. For handling neutral mixtures or mild caustic liquors, the motor shaft is adequately protected by means of a heavy shaft sleeve through the stuffing box. For acid mixtures, the impeller is threaded directly to the shaft and the shaft sleeve is cast integral with the impeller.

● Variable Speed Drive

A compact new type variable speed drive that provides quick, sure control of line conveyor methods, particularly in the medium and higher horsepower fields has been announced by Lombard Governor Corporation of Ashland, Massachusetts. Scarcely larger than the motor with which it is used, the complete unit is easy to handle and install. As the gears are totally enclosed and run in oil the V-Belt is used as a control medium only, primary speed reduction being accomplished by conventional gearing methods.



● Tractor Wagon

The Mississippi Wagon, a high-capacity haulage unit for quarries, contractors, sand-and-gravel producers, etc., is now in production, according to the maker, the M-R-S Manufacturing Company of Jackson, Mississippi. Three models of 9½, 10½, and 15 cubic yards heaped capacity are being manufactured. No part of the weight of the loaded trailer is on the tractor except when needed for traction purposes. The tractor can be quickly detached and used for other work, such as pulling sheepsfoot rollers, rubber tired rollers, etc. Only 12 pounds of air is necessary in the four drive tires of the tractor, insuring good tractive effort after the load is dumped or when the tractor has been detached and is being used for other work.

Latest Development in Synthetic Construction for Severe Service

LARGE size rock and ore from primary crushers, coal in underground conveyors, and sharp or highly abrasive material are severe services for conveyor belting. Super-Excelo Reprene is constructed with special synthetics which provide superiority in wear and cut resistance. Oil-and-heat-resistant qualities provide further life under many severe service conditions. Weight of fabric, number of plies and thickness of cover are established by load requirements and type of application. Super-Excelo Reprene represents the highest development in conveyor belting and will give the utmost in long, economical service under extreme punishment. Ask your Republic Distributor about Super-Excelo Reprene on your tough materials-handling jobs.

REPUBLIC RUBBER

DIVISION

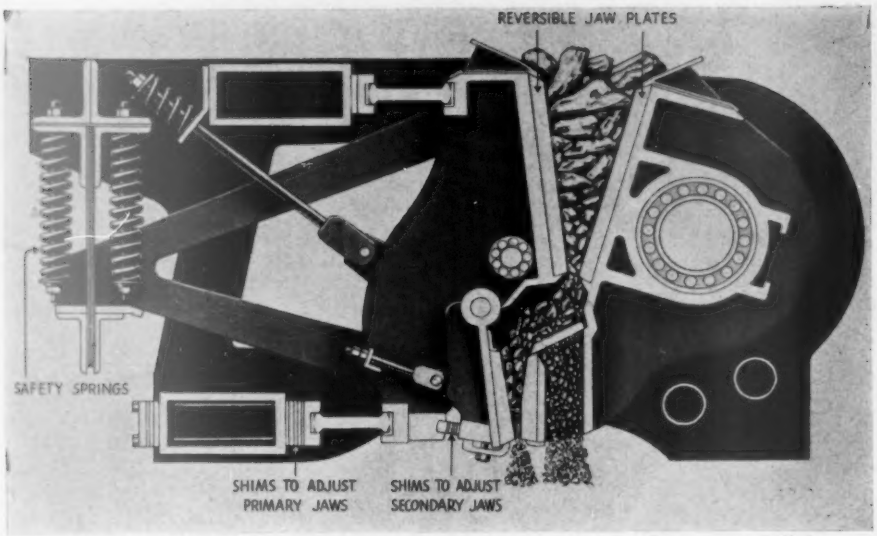
LEE RUBBER & TIRE CORPORATION

YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS
YOUNGSTOWN, O.

LEE DELUXE TIRES AND TUBES
CONSHOHOCKEN, PA.

WE ARE PARTICIPANTS IN THE OWNERSHIP AND OPERATION OF NATIONAL SYNTHETIC RUBBER CORPORATION

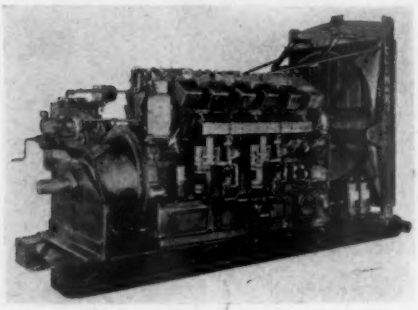


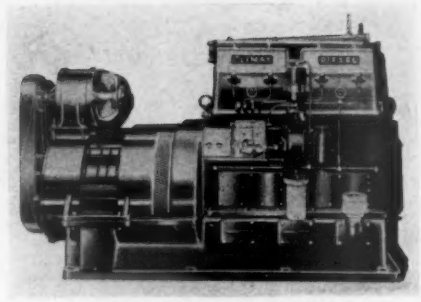
● New Crusher

A new crusher, revolutionary in construction and operation, is being presented to the mineral industries by two companies. E. R. Ebersol, the inventor, has licensed the Barber-Greene Company of Aurora, Illinois, as exclusive manufacturer of his crusher for use in portable plants, while his company, the Ebersol Crusher & Engineering Company, Lancaster, Pennsylvania, retains the manufacturing rights for machines to be used in permanent installations in the quarry and mining fields. The Ebersol crusher combines and utilizes several fundamental stone-reduction principles to increase capacity, efficiency, economy, and versatility. It is a complete two-stage, four-speed jaw crusher operated with only one main shaft. The upper and lower jaws are composite elements having identical action, but constructed to function as distinct primary and secondary crushers. Likewise, their reduction ratio is said to be comparable to that of the conventional and widely used two-unit outfits employing separately propelled jaw and roll crushers. Because there is no absolute dependence on gravity to feed this crusher, there is no limiting factor such as stone flow. Consequently, it is said, it can operate at the speed that produces the highest degree of efficiency. The fact that the up-and-down movement of the two jaws of the Ebersol crusher is synchronized and the fact that they travel in the direction of the material flow are said by the inventor to make it possible to crush the stone by pure pressure alone and without rubbing and abrasion. This, it is said, reduces the amount of power required for operation and reduces wear of the crusher jaws.

● Diesel Engines

The production of two solid injection, compression ignition engines was announced by Climax Engineering Company of Clinton,





Iowa. These prime movers are additions to the Company's line of Blue Streak gas engines, 8 to 495 h.p., generating sets, 300 watts to 312 Kva., and complete accessory equipment. Both new engines are 4-cycle, full diesels and intended for use as light plants and primary drives for pumps, compressors, mills, mine equipment and marine service.

● New Drier

A new type of drier, to be called the Link-Belt, Multi-Louvre drier, is announced by the Dryer Division of Link-Belt Company, Chicago, for the low cost drying (or cooling) of bulk materials which do not require long retention periods.

The new drier is described as a very compact, fully-inclosed unit, containing moving

louvers supported on power-operated endless chains. The function of these moving louvres is to present the material as it flows, to secure the most efficient drying (or cooling) action.

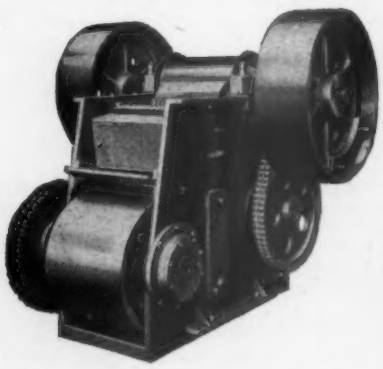
This mixing action and thorough contacting of the material with the heated air introduced into the unit is said to promote efficient drying and assure a uniformly dry material.

● Lubricator

To help in the conservation of precious machinery, the Gray Company, Inc., Minneapolis, has announced a new bucket pump called the "Block Buster" for lubricating

trucks, quarry equipment, industrial machinery, etc. This pump will handle all heavy duty lubricating jobs easily and quickly, the maker declares. It has several unique mechanical features and was designed to withstand hard "on-the-job" servicing. The unit can be obtained with a 5½ or 10½-foot hydraulic adapter-equipped hose assembly, giant buttonhead coupler-equipped hose assembly, or standard buttonhead coupler-equipped hose assembly.

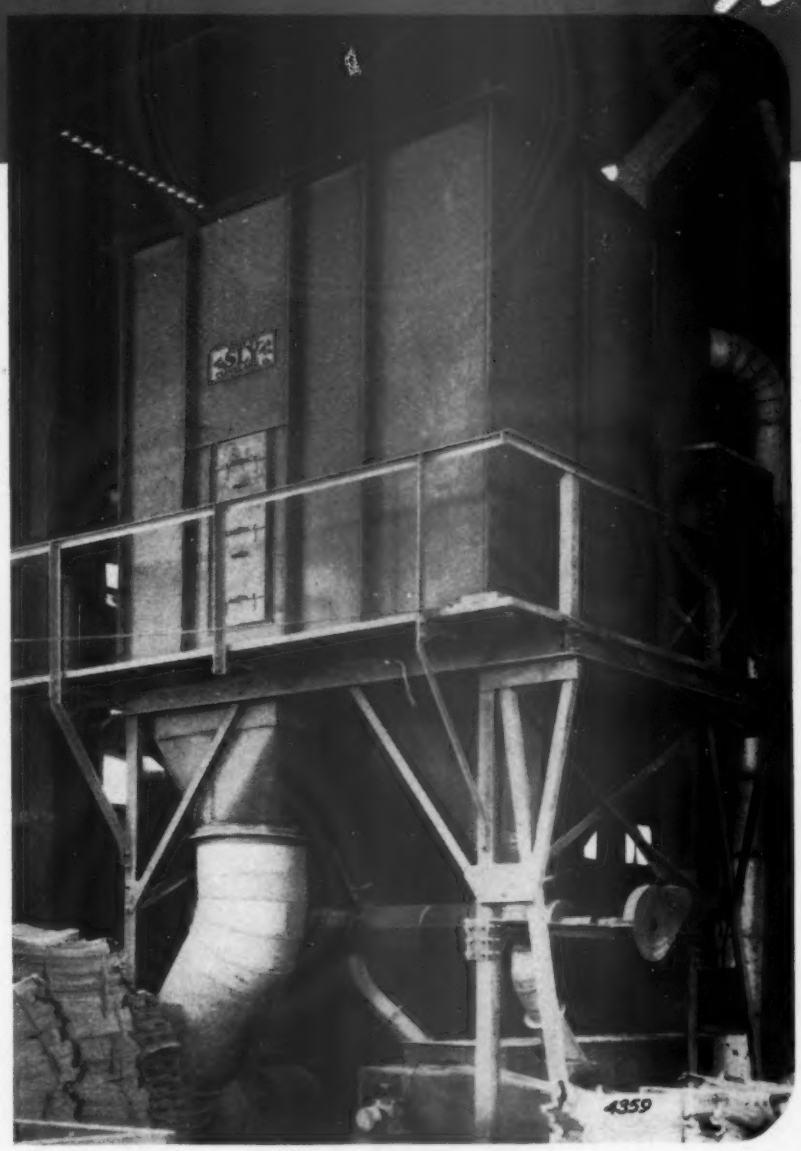
● Jaw and Roll Crusher



The Diamond Iron Works, Inc., Minneapolis, manufacturer of jaw and roll crushers and both portable and stationary crushing plants, recently introduced the Diamond Dual-Action crusher. This machine is said to combine the functions of the jaw and roll crushers in one machine, giving primary and secondary crushing in a single operation. The new crusher is particularly suited for use in portable crushing and screening plants. In addition to the savings in weight, space and horsepower, the crusher allows the plant to be considerably shorter, lower, lighter in weight, and less costly. Diamond Iron Works Inc. will gladly send equipment bulletin D-44-M upon request. Its dealers are located in all important centers.

SLY DUST Control

Widely Used... Not Expensive



This is a typical Sly installation. Literally, hundreds of similar installations are in use in connection with production of cement, crushed stone, agricultural limestone, gypsum, asbestos, talc, feldspar, fluorspar, gold, copper and iron ore, diatomaceous earth, bauxite, etc.

Sly Dust Filters collect dust generated in such operations as crushing, grinding, screening, conveying, loading, separating, and mixing. They comply fully with the requirements of the laws and regulations of the various states.

●

Illustration at left shows a Sly Dust Filter in the pack house of a cement plant. Several dust pipes enter the fan side of the filter. The exhaust fan is located in the floor below filter. A screw conveyor automatically and continuously removes the collected cement. Hundreds of similar Sly Filters are used in cement plants and other rock product industries.

Inexpensive to install and maintain, Sly Dust Control systems soon pay for themselves. Ask for Bulletin 98 and tell us your problem so that we can write you fully.

THE W. W. SLY MFG. CO.

4745 TRAIN AVENUE
CLEVELAND 2, OHIO

SLY
INDUSTRIAL DUST CONTROL

Puget Sound

(from page 123)

conveyor which extends under the three railroad tracks to the barge-loading dock. A 30-inch by 43-foot cross belt-conveyor feeds materials on it from the other two reclaiming conveyors. The long dock conveyor is inclined near its discharge end and is followed by a 30-inch by 70-foot inclined conveyor. This is connected

• The 5- by 12-foot, 2-deck screen used for rewashing crushed gravel.

to a Merrick Weightometer which automatically records the weight of material loaded. This conveyor discharges the material on a 5- by 12-foot Ty-Rock double-deck screen equipped with sprays for re-rinsing. This screen replaced the original 4- by 12-foot unit. Coarse wire cloth on the top deck of this screen serves

• One of the two 4- by 12-foot screens which do first gravel sizing.

only to protect the 12-mesh bottom deck from the impact of large gravel. When sand is being loaded it by-passes the screen direct to the 30-inch by 60-foot barge-loading boom conveyor. Barges of up to 750-cubic yard capacity are tied up to the 435-foot dock which is at right angles to the 298-foot pier, both built of wood on timber piles. This system can load barges at the rate of 500 cubic yards per hour.

The new finished-storage addition to the plant is being built in back of the present bins with a 266-foot concrete tunnel in line with the tunnel in which the main barge-loading belt now runs. The present 30-inch by 434-foot reclaiming belt-conveyor will be extended to the full length of the new tunnel. Above the tunnel there are eight concerete partition walls spaced 30 feet apart and providing storage for five gradings of gravel and three of sand. The storage capacity of this system will be about 8,000 cu. yd. The material for this storage will come from the present middle row of wooden bunkers and the same reversible shuttle belt which feeds from it to the car- or barge-loading belts will discharge on a 24-inch by 180-foot inclined conveyor. This will discharge the material on a 24-inch conveyor, supported on the partition walls from which a Link-Belt traveling tripper will discharge it into storage.

The washing water used at this plant is still obtained from the same freshwater pond about ½ mile from the plant but several things have been added. A 12-inch free-flowing well 1,025 feet deep was recently completed which brings 700 g.p.m. of water into the lake. The original Bingham 2,700-g.p.m. deep-well pump which supplied the water to the plant has been supplemented by a 600-g.p.m. Worthington deep-well pump connected to the same line. A second 2,700-g.p.m. Bingham pump has also been added as a spare to be operated alternately and in case of an emergency. The main pipe line to the plant is 16 inches in diameter.

Nearly 1½ miles of conveyor belting is used in the pit and plant, most of it Goodyear. The old steel chute lining has been replaced with Goodyear "Armadillo" rubber lining in most cases and some Pioneer "Tensilite" rubber lining. This lining has been found to last three or more times as long as the abrasion-resisting steel formerly used. The eight new Tyler Ty-Rock screens are all driven through Gates V-belts.

The new finished-storage addition to the plant is being built in back of the present bins with a 266-foot concrete tunnel in line with the tunnel in which the main barge-loading belt now runs. The present 30-inch by 434-foot reclaiming belt-conveyor will be extended to the full length of the new tunnel. Above the tunnel there are eight concrete partition walls spaced 30 feet apart and providing storage for five gradings of gravel and three of sand. The storage capacity of this system will be about 8,000 cubic yards. The material for this storage will come from the present middle row of wooden bunkers and the same reversible shuttle belt which feeds from it to the car- or barge-loading belts will discharge on a 24-inch by 180-foot inclined conveyor. This will discharge the material on a 24-inch conveyor, supported on the partition walls, from which a Link-Belt traveling tripper will discharge it into storage.

Army to Store Heavy Machinery in Quarry

Army officers have been inspecting the Valmeyer quarry property at Valmeyer, Illinois, with a view to the possible use of the worked out portion of the mine as a storage space for surplus heavy machinery.

The mine has 70 acres of underground storage space, and a dry, even temperature of 54 to 56 degrees.

Among the more obvious advantages of its use would be the simplification of the surplus equipment disposal problem after the war, since a few sticks of dynamite strategically placed could settle the entire question in a matter of seconds.

Expect Building Boom

Sand and gravel operators at Evansville, Indiana, are looking for a boom in their business after the war is over. A recent survey by government officials shows that there is a housing shortage in that city and plans are being laid for the construction of many new residences. There are many war plants in Evansville and it is estimated there now is a surplus population of between 45,000 and 50,000 people. It is believed that many of these people will continue to reside in Evansville after the war and new homes will be needed for them. Many of the war workers and their families now are living in trailers due to the shortage of houses in the city.

The Silica Sand Company's plant at Everton, Arkansas, which closed down several months ago for repairs, has resumed operations. In addition to the repairs, new machinery has been installed which will materially increase production. The plant normally employs from 40 to 50 men.

RUST—a nuisance and a very costly menace in many places no longer need be tolerated. Laboratory magic has furnished its master.

New Sinclair products, developed to solve tremendous military rust problems, are now available for your problem.

Sinclair RUST-O-LENE B for exposed metal surfaces of machinery in operation, in storage, or in transit

—provides a firmly-adhering rust proofing film
—prevents rusting of clean surfaces
—halts further rusting of corroded surfaces
—has lubricating qualities
—defies any degree of moisture from mere dampness to heavy rain
—can be readily removed when desired

Sinclair OPALINE RP (Rust Preventing) OILS for enclosed oil systems, prevent internal rusting of engines, hydraulic systems, gear reducers, and similar machinery intermittently operated, stored, or transported. OPALINE RP also has ample lubricating qualities for temporary use.

Both these remarkable Sinclair rust-preventives have successfully passed the most exacting service tests, and fully meet Government specifications.

Learn how RUST-O-LENE B and OPALINE RP can combat rust for you. Write for brochure giving full details.

SINCLAIR LUBRICANTS—FUELS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

LUBRICATION
IS INDUSTRY'S
PRIME ESSENTIAL

The "all-out" production of the war period has not only proven the importance of proper lubrication but has effectively demonstrated the superiority of LUBRIPLATE Lubricants. Even the most confirmed skeptic must admit that when two surfaces do not touch, there can be no appreciable wear. The separating film of LUBRIPLATE is tougher. That is why LUBRIPLATE Lubricants impart longer life to shafts, bearings, and gears. LUBRIPLATE has qualities not possessed by conventional lubricants.

LUBRIPLATE
Lubricants definitely reduce friction and wear to a minimum. They lower power costs and prolong the life of equipment to an infinitely greater degree. LUBRIPLATE arrests progressive wear.

LUBRIPLATE
Lubricants protect machine parts against the destructive action of rust and corrosion. This feature alone puts LUBRIPLATE far out in front of conventional lubricants.

LUBRIPLATE
Lubricants are extremely economical for reason that they possess very long life and "stay-put" properties. A little LUBRIPLATE goes a long way.

Write for a booklet, "The LUBRIPLATE Film", written especially for your industry.

LUBRIPLATE
FISKE BROTHERS REFINING CO.
NEWARK 5, N. J.
TOLEDO 2, OHIO

PERSONAL MENTION

GEORGE F. CORNELL, assistant secretary of the Warner Co., and Howard H. Oberly, president of the Oberly Brick Company, of Wilmington, Del., were among those recently (Dec. 11) named to the managing committee of the wholesale section of the Wilmington Chamber of Commerce.

At its annual meeting the section decided to sponsor a series of instructional conferences for sales executives in the Wilmington area, to be started after the first of the year. The course, to include weekly conference group meetings for five weeks, will be on the general subject of "Selecting and Training Post-war Personnel."

RICHARD P. SCOTT, veteran cement mill engineer, was recently appointed manager of the manufacturing research bureau of the Portland Cement Association, it was recently announced by Wm. M. Kinney, general manager of the Association. Mr. Scott has had twenty years' experience in cement plant engineering. He resigned as assistant to the general operating manager of the Universal Atlas Cement Company to accept the Association appointment.

H. R. BRANDENBURG, formerly chief chemist of the Cowell Lime & Cement Company, and more recently in charge of magnesium operations for the Idaho - Maryland mines at Grass Valley, California, has engaged in private practice as a chemist and metallurgist at Reno, Nevada. He retains his post as technical director of the Western Mining Council.

W. VERNON BRUMBAUGH, well known throughout the lime industry through his more than a decade's service as secretary of the National Lime Association, has resigned to enter trade-association work in other fields. We will be the Washington representative of McClure, Hadden & Ortman, Inc., management engineers of Chicago, and will serve in that capacity the American Ladder Institute, the American Washer & Ironer Manufacturers' Association, the National Plywood Distributors' Association, the Non-Ferrous Founders' Society, the Venetian Blind Association of America, and the Waxed Paper Institute, Inc. His new address will be 914 Press Building, Washington 4, D. C.

Mr. Brumbaugh came with the association November 1, 1926, as a field engineer in the Chemical Department. Later he became manager of this department, and in 1929 was elected assistant secretary and assistant treasurer. In 1933 he was elected secretary and served in this capacity until the date of his resignation. For a number of years he also acted as secretary to Committee C-7 on Lime of the American Society for Testing Materials and took an active part in the standardization of materials and tests. In 1934 the association began the publication of Limeographs and Mr. Brumbaugh became the editor. Not a single issue has failed to go out on the 15th of each month since that time. His long and useful service has won him many friends in the industry and all undoubtedly join in wishing him the fullest measure of success in his new work.

J. J. FOX, formerly with the Lone Star Cement Corporation and for the past 12 years chief chemist of the Missouri Portland Cement Company at St. Louis and Kansas City, Missouri, has joined the Glens Falls Portland Cement Company at Glens Falls, New York, as general chemist.

L. A. DAHL, manufacturing research engineer, who has been in charge of the Manufacturing Research Bureau for the past four years, is returning to the Association's research laboratory.

P. C. BLACK, of Amherst, N. S., for many years active in the ownership and operation of pits and quarries not only in Cumberland but other counties in Nova Scotia, was renominated by a convention at Amherst as the Progressive Conservative party candidate for the Canadian House of Commons at elections to be held in 1945. This action was taken by the convention despite Mr. Black's announcement that he is retiring from politics for private reasons and would not accept the nomination. He is finishing out his first term in the house as the representative of Cumberland, and previously was a member of the Nova Scotian legislature and government.

CHARLETON DUNN has been named production manager of Graham Brothers, Inc., operator of several sand, gravel and ready-mixed-concrete plants in the Los Angeles area. He succeeds Carl Powell, who resigned to become concrete superintendent for the contracting firm of Ford J. Twaits of Oakland, California. Mr. Dunn was formerly connected with Graham Brothers but, before taking his new position, had for a number of years been in charge of the packing-and-storage plant of the Santa Cruz Portland Cement Company at Long Beach, California.

KURT W. JAPPE, manager of detonator operations, Hercules Powder Company, has been appointed treasurer of the American Society of Mechanical Engineers succeeding Dr. William D. Ennis, who will retire December 31 after holding office since 1935. Mr. Jappe, who has been a member of the ASME's finance committee for the past nine years and chairman of that committee for the past two years, joined Hercules in 1938 as an industrial engineer in the explosives department.

MAJOR ROBERT E. DAVIES, formerly weighmaster of the Consolidated Rock Products Company, Los Angeles, and more recently a pilot in the Army Air Force, is a German prisoner of war. His plane was shot down while on a mission over Jugoslavia.

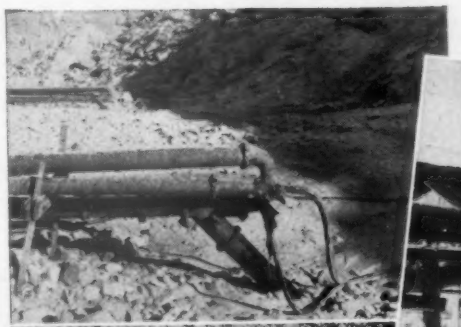
G. C. (JERRY) RASEY has been named supervisor of the marine and stationary Diesel division of the general sales department at the Joshua Hendy Iron Works, Sunnyvale, Calif., with Lawrence H. Earle and Louis Kaiser as his assistants.

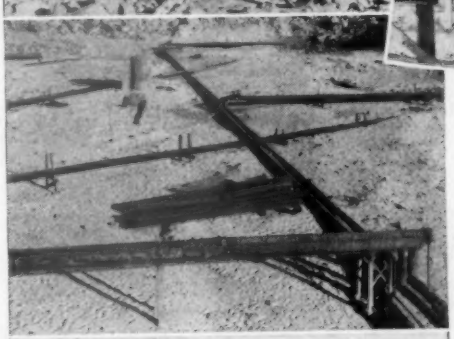
Before joining the Hendy organization, Rasey was west coast representative of the Murphy Diesel Company, Milwaukee, Wisconsin. Prior to that, he was sales manager for the Washington Iron Works, Seattle, Wash.; development and sales engineer for the Hercules Motors Corporation, Canton, O.; and chief power engineer for the Bucyrus-Erie Company, Milwaukee, Wisconsin.

H. R. PITTMAN has been appointed treasurer of the Vulcan Iron Works, Wilkes-Barre, Pennsylvania, to succeed W. W. Moss. Mr. Pittman has been connected with the company for twenty-seven years, serving successively as chief clerk, comptroller, and assistant secretary and treasurer.

NAYLOR PIPE
HELPS OTTAWA SILICA
MOVE MOUNTAINS

Naylor light-weight pipe is at its best on tough jobs like the Ottawa Silica Company operation at Ottawa, Illinois. The greater strength, leak-tightness, safety and economy provided by Naylor's exclusive Lockseam Spiralweld structure, plus Naylor's advanced-type coupling medium make this pipe ideal for hydraulicking, sand and gravel conveying lines, high and low pressure water lines, ventilating lines and other similar operations.

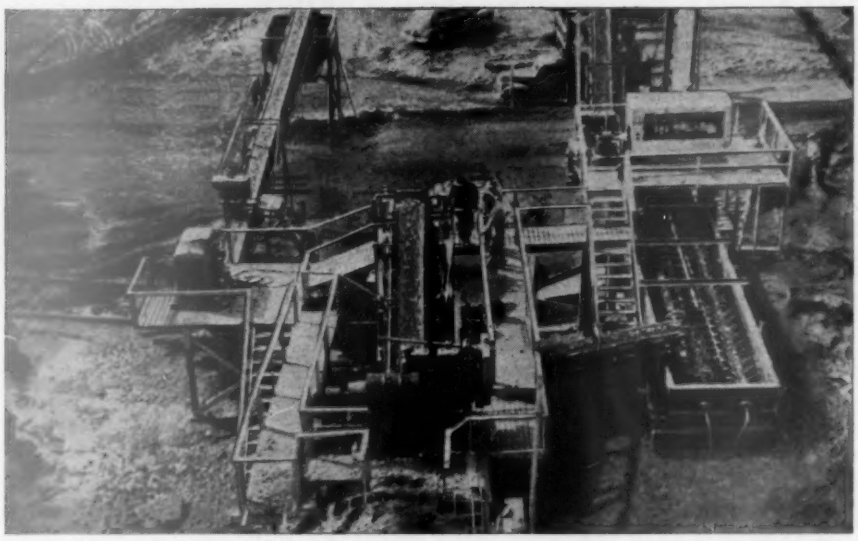




Sizes from 4" to 30" in diameter. Thickness from 14 to 8 gauge. All types of fittings, connections and fabrication.

Naylor
LOCKSEAM
SPIRALWELD PIPE

NAYLOR PIPE COMPANY
1257 East 92nd Street
Chicago 19, Illinois



Effectively Removes Waterlogged Wood and Blue Clay from 200 Yds. of Gravel Per Day

An Illinois operator has this to say regarding their Eagle 18" Screw Type Gravel Washer. "This machine is giving extremely satisfactory service. We wash about 200 yds. of gravel per day and are very effectively removing chunks of blue clay and waterlogged wood with it. *While we are feeding this washer with gravel which is much too small, yet it is doing an excellent job of cleaning.*"

Complete details in Bulletin 44. Send for a copy today!

Send for Catalog No. 44 for complete details on Eagle Classifying and Dewatering Equipment.

Portable Stock Pile Rewashers, Too!

Eagle Portable Stock Pile Rewashers are a definite aid to premium sand and gravel producers who desire a final washing of sized stock pile materials prior to shipping. Supplied complete with bin, screw washer, tank and loading chutes, they produce a large volume of high quality material. Details of existing plants or special designs to suit your specifications gladly supplied on application.

EAGLE IRON WORKS
133 Holcomb Avenue
Des Moines, Iowa

EAGLE ***Specialized Sand and Gravel Equipment***
"SWINTEK" DREDGE LADDERS — SCREW WASHERS
LOG WASHERS — DEHYDRATORS — SAND TANKS
CLASSIFIERS — REVOLVING SCREENS
EAGLE IRON WORKS
DES MOINES, IOWA
"SERVING INDUSTRY FOR OVER SEVENTY YEARS"

OBITUARIES

CLAUDE L. WAGNER, 58, vice-president of the Superior Portland Cement Company of Seattle, passed away in December at his home in Yakima, Washington. He was a native of Illinois and shortly after receiving his chemical-engineering degree from the University of Illinois in 1910 he took employment as a chemist with the Superior company. Shortly afterward he became chief chemist and, in 1925, was made general superintendent. Besides his widow he is survived by a brother, Ralph Wagner, of Harvard, Illinois.

HARRY H. MITCHELL, 85, an executive of the General Crushed Stone Company, Easton, Pennsylvania, died December 9 at his winter home in Eau Gallie, Florida. A native of Mount Vernon, Ohio, he went to Easton 30 years ago. He was treasurer of the stone company for many years and was vice-president at the time of his death. He also was a former director of the Easton National Bank; past president of the Easton Rotary Club, and had been active in the Boy Scout movement and many other civic and welfare activities in Easton.

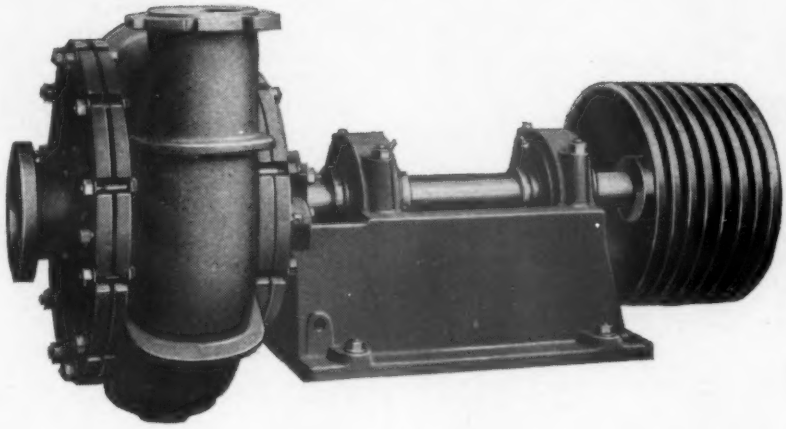
WILLIAM R. DUNN, former general manager of the Vulcanite Portland Cement Company at Alpha, Pennsylvania, died recently in West Chester. He was born and educated in Philadelphia and became officially identified with the Vulcanite company in 1896. Mr. Dunn was the holder of a number of patents pertaining to the manufacture of cement.

O. F. POINDEXTER, 46, economic geologist of the Michigan Geological Survey, died December third of a heart attack following a collapse at the Eaton County Court House in Charlotte, Michigan. Mr. Poindexter attended the University of Kentucky and the University of Michigan, graduating from the latter school in 1922. He obtained his Master's Degree from Michigan in 1924 and until 1927 was instructor in Economic and Engineering Geology at Case School of Applied Science in Cleveland.

Mr. Poindexter first came to the Michigan Geological Survey in 1924 as a member of a field party locating gravel for highway construction.

DEMONSTRATED

"Life Expectancy" Makes Satisfied Users



MORRIS

Centrifugal MATERIAL-HANDLING PUMPS

It's as difficult to put your finger on the exact reasons for exceptional "life expectancy" in a pump as it is in a man. But basically the fundamental structure must be sound . . . and well-adapted to the environment. Over-strain must be avoided.

That's why Morris pumps feature larger shafts, larger and better-sealed bearings, more ample stuffing boxes, and heavier cast sections. To avoid excessive strain, wear and vibration, Morris pumps are designed to give top efficiency at moderate speeds. Flow through the pump—even of heavy slurries and highly viscous fluids—is smooth and constant, assuring uniform loading of the impeller and balanced radial forces acting on the shaft. Shaft deflection is negligible and packing wear is substantially reduced.

More Output With Less Power and Maintenance

Owners are usually amazed at the sustained efficiency, and at the lower power, labor and maintenance costs when figured on a year-in, year-out basis. The accurate dynamic balance of all rotating parts—the smooth, vibration-free operation—and the outstanding wearability of all parts—give maximum value for the dollars invested. *Write today for Bulletin.*

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Branch Offices in Principal Cities

MORRIS CENTRIFUGAL PUMPS

He continued with this summer work until 1927 at which time he was placed in charge. After the completion of this project he became Economic Geologist of the Michigan Geological Survey specializing in non-metallics and he was the author of a number of articles on related subjects.

EUGENE H. MILNER, 50, vice-president and general manager of the Mississippi Lime Company of Alton, Mo., died recently in a St. Louis hospital of heart disease. He was stricken while on business at the firm's quarry. Mr. Milner had been with the lime company since 1920. His widow and two daughters survive.

R. D. PATERSON, of St. John, N. B., who died recently, had been active in lime manufacturing for many years at Brookville, a suburb of St. John, and where two sets of quarries and plants are now functioning. Mr. Paterson organized and headed the Provincial Lime Company. He was a past president of the St. John Rotary Club and a past district governor of Rotary Clubs. He had been in ill health about a year. The death of Mr. Paterson followed about 18 months after that of W. B. Tennant, of St. John, who had also been active in lime production at Brookville.

G. B. LIVINGOOD, advertising manager of the Traylor Engineering and Manufacturing Company, Allentown, Pennsylvania, and editor of The Traylorian of that company, passed away recently.

Legal Decisions

By LEO T. PARKER

●

Fair Labor Standards Act

The Fair Labor Standards Act requires employers engaged in interstate commerce to pay not less than the wages specified by this law. Modern higher courts hold that the benefits of this law are extended to such employees as maintenance workers, watchman, clerks, stenographers, messengers, all of whom must be considered as engaged in processes or occupations "necessary to the production" of the goods sold in interstate commerce.

The motive and purpose of the act is

to fix wages, not for particular individuals and companies, but on a basis which the particular industry can stand and under conditions which, if classification is required in the industry, will not give one section of it a competitive advantage over another.

The legal question presented to numerous employers is: What employees are included in this law? Broadly, all employees actually engaged in an "occupation necessary to the processing, handling or production of goods" are within the meaning of the Fair Labor Standards Act.

For example, in *Brooks Company v. Henry,* 137 Pac. (2d) 918, it was shown that a company is engaged in producing goods only a part of which is shipped in interstate transactions.

An employee sued the company for recovery of a sum of money alleged to be due him as wages. During the trial the testimony proved that the employee had served as a night watchman and his duties included tending of fires, vats and other utensils used in processing the merchandise.

In holding the employee entitled to wages specified by the Fair Labor Standards Act, the higher court said that although an employee works only part time in interstate work he is entitled to payment of wages under the Fair Labor Standards Act for his full time.

Also, see the case of *Walling v. Jacksonville,* 317 U. S. 564, where the Supreme Court of the United States said: "The fact that all of respondent's (employer's) business is not shown to have an interstate character is not important. If a substantial part of an employee's activities related to goods whose movements in the channels of interstate commerce was established by the test he is covered by the act."

BODIES and HOISTS LIKE THESE by HERCULES...

Hercules High Dumper
Power up, Power down

are giving maximum service with minimum expense, day after day, on the home front.

"Victory is our business", and our war production is playing an important part in bringing victory nearer; but production for essential civilian use is also important, and we're able to make quick deliveries on many types of Hercules Hydraulic Hoists and Bodies to you.

See your Hercules Distributor, or send inquiries direct to us.

HERCULES STEEL PRODUCTS CO.
GALION, OHIO

Hercules Low-mount Sanitary Body

Hercules Braced Side Rub Rail Body

Hercules 6-Batch Coal Body

Questions and Answers

[Mr. Parker will be glad to answer questions regarding legal problems of PIT AND QUARRY readers. Questions should be addressed to Leo T. Parker, Legal Editor, PIT AND QUARRY.—Ed.]

Legal Editor: When a shipper contracts with a truck operator for transportation of merchandise to certain points does the shipper then become the employer of the truck owner, and is the employer responsible for the truck owner's negligence? Also, who pays the social-security tax? If the truck owner meets with an accident involving physical injuries or property damage while *en route* and he is not covered by insurance, can the shipper become liable for any or all damage claims provided the truck owner is not financially able to settle? What is the law on this subject? We pay truck operators to transport material for us, but we have no control over the drivers and we only pay a stated amount per hundred pounds.—H. C.

Answer: The answer to your legal question depends upon whether or not the truck owner is an independent contractor. Generally speaking, an independent contractor is one: (1) who undertakes to perform work requiring skill; (2) who is employed to produce certain results according to his own means and methods and to employ his own help; (3) who agrees to furnish *a part of or all the materials or appliances for doing the work;* (4) who is engaged in a distinct and recognized employment and is to be paid *either a gross sum of money or by piece work;* (5) who is free as to his hours of labor and under *no* obligation to work exclusively for his employer; and (6) the employees are not under the control of the employer.

In fact any one who accepts work under these conditions is an independent contractor, and his employer is *not* liable in damages for his negligence, and he is not obligated for social-security taxes.

On the other hand, it has been held that a company is personally liable as an employer where it hires a *motor-truck and its driver* for a stipulated sum with the expressed or implied understanding that it has control over the driver and has authority to direct him where, when and how to perform the work. Under these circumstances the owner of the truck is relieved of liability because the employing company became the legal employer when it assumed control over the driver.

Legal Editor: We are informed that, if we have materials shipped into our yard from outside the state and our truckman delivers the materials to our customers within the state, we must pay him wages under the Fair Labor Standards Act. Is this so?—G.R.C.

Answer: Not if you do not have definite contracts or orders for the materials when they arrive in your yard. Modern higher courts hold, for example, that if you use your yard for a storage place and deliver materials therefrom, as the orders come in, you transact intrastate

business. However, if, for instance, you have an order for 1,000 tons of crushed rock and receive it from outside the state to fill your previous orders there is, in this case, no stoppage which breaks the interstate character of the interstate transaction. Moreover, if the material is stopped merely for sorting or cleaning, also, there is no legal stoppage which breaks the interstate transportation. But, if the materials are stored for future delivery, you transact purely intrastate business. On the other hand, if your truckman calls at a depot and picks up an interstate shipment for delivery to your yard he is considered an interstate employee and entitled to wages under the Fair Labor Standards Act.

Legal Editor: We have been informed that in Iowa a state law exists which will prevent us from selling products at different prices in different locations in this state. Please look up this law for us and we shall appreciate it very much.—E. S. C.

Answer: Monopolies have always been odious at common law, and all contracts, arrangements, or agreements in restraint of trade or of free competition are void and illegal. Therefore, modern higher courts consistently uphold the validity of state laws which prohibit a seller from selling materials and other merchandise at a price lower in one locality than in other localities.

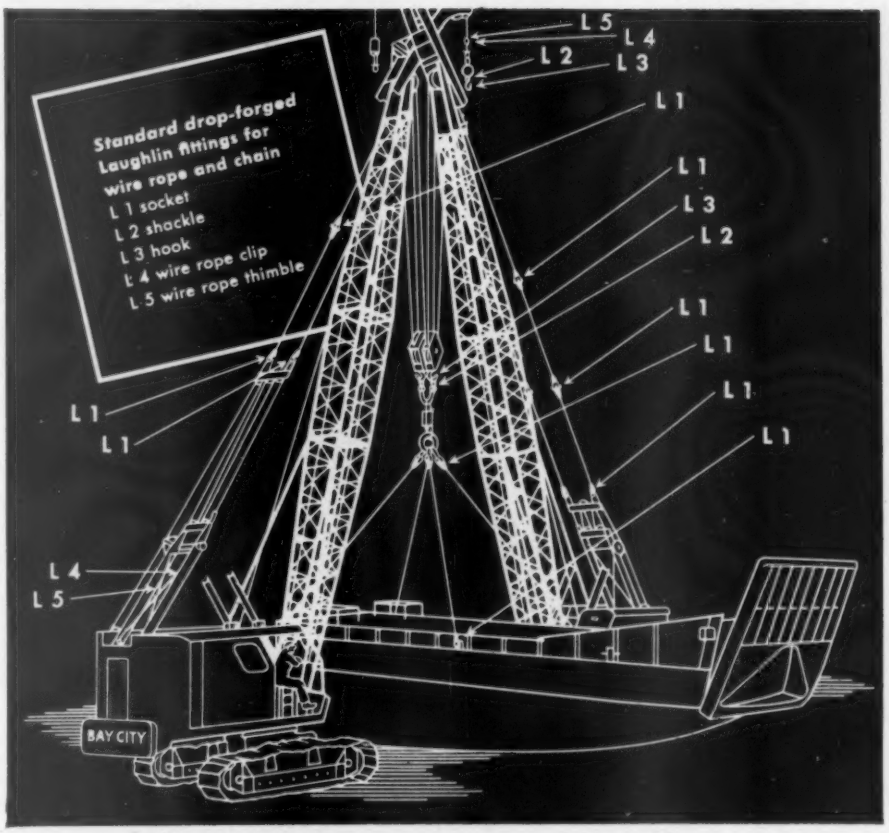
For example, in *Farmers Co-Operative Association v. Quaker Company,* 7 N. W. (2d) 906, reported March, 1943, it was disclosed that an Iowa state law was litigated which prohibits unfair discrimination in sales of merchandise and provides a penalty for anyone who shall, for the purpose of destroying the business of a competitor in any locality, sell such commodities at a lower price in any one community than he sells the same products for in other sections, localities, communities or towns in the state. Suit was filed against a company which was selling merchandise in one city at less than the price at which it sold the same merchandise at certain other localities in Iowa. The higher court upheld the validity of the law, and said:

"The statute here under consideration is criminal in character. Aside from the provisions of the statute in question, this court has recognized the right of a citizen to protection from unfair competition."

Legal Editor: Recently we employed a contractor to excavate certain materials. In order to protect ourselves we compelled him to sign a contract agreeing to relieve us from liability for damage to near-by property. The question now is: Can property owners sue us for damage to their property caused by blasting done by the contractor?—L. C.

Answer: Modern higher courts consistently hold that, notwithstanding ambigious clauses in a contract, the "intent" of the contracting parties *when the contract was signed* is the important consideration when deciding a litigation. One of the most important higher court cases decided during many years and illustrating this principle of law is *Coley v. Cohen,* 45 N. E. (2d) 913. In this case a contractor entered into a written contract with the Buffalo Sewer Authority for the construction in the municipality of a sewer. The work was to be performed and the materials furnished by the contractor according to specifications attached to and made a part of the contract. Another important clause in the contract provided that the contractor

SAVE TIME AND MONEY AT EVERY POINT



The L's mark the spots where you can save money in wire rope and chain fittings, by . . .

1. eliminating "specials" — Laughlin has the most complete line of drop-forged standard fittings.
2. protecting ropes and chains — husky Laughlin fittings take their full share of the load.
3. lasting as long or longer than ropes or chains.
4. protecting lives, loads, plant equipment — as with Laughlin's unique Safety Hooks.
5. reducing installation time — 3 "Fist-Grip" clips do work of 4 and are quicker to install.

Protect your investment in wire rope and chain with quality fittings. Specify Laughlin — fittings that save you time, materials and money. Write for complete catalog. Address Dept. 3, THE THOMAS LAUGHLIN COMPANY, Portland 6, Maine. Laughlin fittings are distributed through mill, mine, and oil field supply houses.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

would indemnify the city and the sewer authority against any and all claims for injuries to persons and property arising from negligence on the part of the contractor. And still another clause in the contract provided that the contractor would indemnify the city and sewer authority against any and all claims arising from excavation, blasting or by accidental explosions whether or not the damage would be caused by the contractor's negligence. In other words, the contractor agreed to relieve the city for damage suits filed by all persons who might suffer damages to their persons or property as a result of any act on the part of the contractor during the construction of the sewer.

Suit was filed by a property owner whose property was damaged due to concussions from blasting operations during the construction of the sewer. The property owner based his suit on the negligence of the contractor. It was contended that by the terms of the contract, signed by the contractor, the property owner must sue the city and then, if the verdict was favorable to the property owner, the city must recover its losses from the contractor by a separate suit. The higher court held the contractor liable in full damages to the property owner, thus saving the city officials time, inconvenience and expense in being involved in this suit. The higher court stated:

"A reading of the contract as a whole indicates that the parties intended to and did separately provide: (1) for the protection of the city and the Authority against suits, claims and damages which might arise out of negligent acts and negligent omissions of duty of the contractor or acts of his agents, servants or subcontractors in connection with the prosecution of the work; (2) for the protection of the city and the Authority from liability arising from the excavation work whether involving negligence or not; and (3) for protection of third persons against damages arising out of blasting operations and accidental explosions regardless of whether liability therefor would ordinarily exist. By giving the words of the clause their obvious and natural meaning, violence is not thereby done to the intent of the parties expressed elsewhere in the contract."

Therefore, it is quite apparent that this higher court based its decision upon the "intentions" of the contracting parties at the time the contract was signed, rather than upon the actual meaning of the words used in the contract.

Legal Editor: When and under what circumstances is a person "responsible" for his own injury whereby an employer may not be compelled to pay damages?—S. S. C.

Answer: Modern higher courts hold that when an employee or other person is familiar with the risks involved in his employment and he deliberately exposed himself to them, he is "contributorily negligent" and can not recover damages for an injury. See *Dallas v. Crescent Transportation Company,* Louisiana, 13 So. (2d) 113, where it was shown that a person, who was familiar with method of unloading merchandise, was standing in a place which he well knew to be dangerous. He allowed his attention to be diverted so that he was not looking when merchandise being unloaded injured him. He sued to recover damages but the higher court refused to hold in his favor, and said:

"The danger being visible and obvious, the failure of the plaintiff to avoid it or to reasonably attempt to do so was such negligence or contributory negligence as will bar recovery."

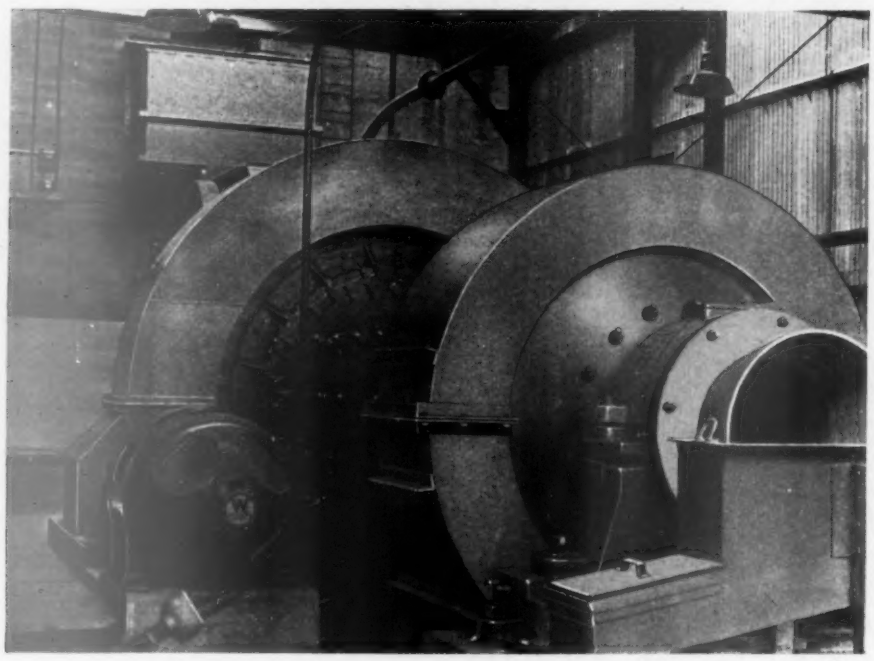
Therefore, persons who are injured as a result of their own negligence are not entitled to recover damages.

Legal Editor: Recently I purchased my partner's interest in the corporation we established. First, we operated as a partnership and later we organized a corporation. I purchased his stock for $5,000 and later sold all the corporation stock for $50,000. He is suing me. Can he recover?—W. M. C.

Answer: Modern higher courts consistently hold that a partner is in duty bound to impart to his partner all available knowledge regarding the partnership business. Therefore, a sale of the interest of one partner to another partner is void if the selling partner failed to divulge secret information of anticipated profits. However, this law is not applicable to corporation stockholders.

For instance, in *Anderson v. Lloyd,* 139 Pac. (2d) 244, it was disclosed that two persons contributed $2,000 and formed a partnership. Later they organized a corporation. One of the parties purchased the other's stock for $25,000; paying part down, the remainder to be paid in installments secured by pledging the stock. Two years later the purchaser sold all the corporation stock for $200,000. The former partner, learning of the sale, filed suit on the ground he had been deceived in that his stock was worth more than $25,000 at the time of the sale. However, the higher court held that the former partner could not recover.

Legal Editor: Please advise whether



A Rod Mill that Aligns the Rods

The conical ends of the Hardinge Rod Mill keep the rods in alignment at all times, regardless of character and size of material being ground—

Provides space at end of rods for free feed and discharge.

Has variable discharge levels.

The conical ends form heads of great inherent strength.

Write for Bulletin 25-B which describes the phenomenon of rod alignment.

HARDINGE

COMPANY, INCORPORATED, YORK, PENNA.

NEW YORK CHICAGO SAN FRANCISCO TORONTO

the payee of a bank check is bound by notations written on the check by the payer.—S. S. G. C.

Answer: Generally a bank check is not a payment of a debt, in the absence of an express agreement that it is taken or received in payment, irrespective of notations on the check. For illustration, in *Wriggelsworth v. Lott,* 11 N. W. (2d) 843, it was shown that a debtor gave a post-dated check to a creditor. This court held:

"If dishonored when presented, a check effects no payment of a debt for which it was drawn, unless there was an express agreement that it was to be accepted or received in payment."

On the other hand, where a check or draft is given by a debtor to his creditor and accepted by the latter, the presumption is that it was intended by the parties as no more than a conditional payment. But it must be remembered that a notation on a check is not binding on the payee unless it is acknowledged by him, or at least brought to his attention. This is so because if the law were otherwise the payor could write any notation on a check *after* it was returned to him from the paying bank and testimony that the notation was on the check when received from the payor would bind the payor to these obligations. Some courts have held, however, that when a notation is written on the back of a check and the payee endorses the check *directly under* the notation such notation assumes the importance of a written contract acknowledged by the payee.

Legal Editor: We are in doubt about application of the Fair Labor Standards Act. If an employee loads motor trucks which transport our products interstate, is he considered an interstate employee? Suppose that he loads trucks only part time and his other duties are purely intrastate. What is his status?—W. W. W.

Answer: An employee who assists part or full time in manufacturing, processing or handling interstate-commerce goods is entitled to wages specified by the Fair Labor Standards Act. For illustration, in *Orange Company v. Tuggle,* 27 S. E. (2d) 769, it was shown that an employee was employed to assist in unloading trucks at the employer's plant. The trucks contained merchandise transported from other states. He sued to recover back wages under the Fair Labor Standards Act. The higher court held in favor of the employee, and said:

"The unloading at destination of an interstate shipment is work in interstate transportation, whether done by the carrier or another."

Another court held that if an employee works part time in interstate commerce the employer must pay him federal wages for his entire time.

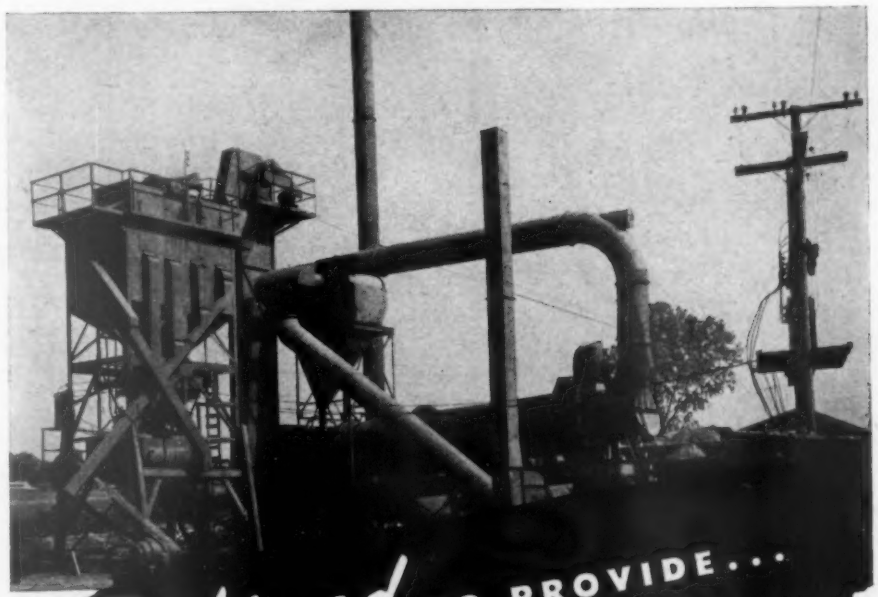
When deciding whether an employee is entitled to payments of wages specified by the Fair Labor Standards Act, the important consideration is: Do the acts performed by the employee, *not the employer's business,* relate to interstate commerce business? In *Baum v. A. C. Office Building Company,* 143 Pac. (2d) 417, a janitor or custodian of an ordinary office building sued his employer for back wages under the Fair Labor Standards Act. The employee contended that he was entitled to wages under the Fair Labor Standards Act because his employer processed materials in the basement of the building, printed part there, and shipped it to different parts of the country. Also, the employee proved that he operated an elevator on which he carried persons engaged in interstate commerce. The higher court refused to allow the employee federal wages, saying:

"In an action under the Fair Labor Standards Act of 1938, 29 U. S. C. A.—201-219, the application of the act depends upon the activities of the employee, not of the employer."

Legal Editor: A few weeks ago we delivered material to a common carrier's pier. Fire destroyed the pier and now the carrier refuses to pay for our destroyed material. Can we recover for the loss?—T. R. C.

Answer: Generally the liability of a common carrier continues after it has accepted goods for transportation and until the transported goods have arrived at their destination, and the consignee has been notified of their arrival and has had a reasonable time to call for and take them away. On the other hand, where the carrier refuses to receive them the carrier can not be held to a more severe responsibility than that of warehouseman.

For instance, in *Dohrmann Company v. Owl Company,* 143 Pac. (2d) 441, a shipper notified a common carrier to call for certain merchandise. The carrier sent its truck, and the driver loaded the merchandise thereon. He started to make the delivery, but it was too late to



Refined TO PROVIDE . . .
Greater Compactness, Increased Capacity and Efficiency

H & B Portable (PA-30) Asphalt Plant . . .

This popular portable asphalt plant has been made even more compact and efficient by several refinements in design. A larger fan and a new horizontal cyclone dust collector are used, and the duct system from the dryer to the dust collector and from the dust collector to the exhaustor has been redesigned. The exhaust fan, motor which drives the dryer, and the speed reducer are combined in one completely assembled unit which is mounted on a separate platform. This decreases the length of the dryer unit, and greatly facilitates handling. A new type of screen reduces the overall height of the plant—without reducing the bin capacity.

Complete information on this more efficient portable plant will be furnished on request.

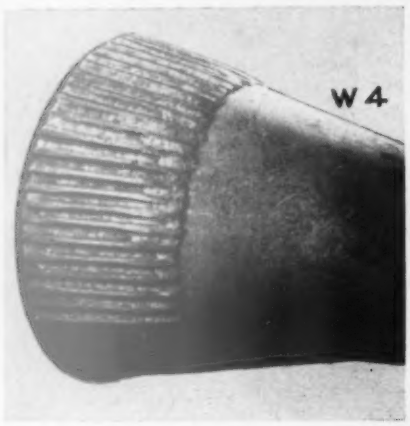
FLUIDOMETER
Automatic Metering System —saves time, materials, insures accuracy and uniformity. For all types of asphalt.

HETHERINGTON & BERNER Inc.
715 Kentucky Avenue • Indianapolis 7, Indiana

Hetherington & Berner

Saving Metal, Money and Time *With Conservation Welding*

Incidental to war production an increasing number of worn ferrous equipment parts—the sort which used to be summarily scrapped — have been salvaged for further useful life with Amsco Welding Products. This practice has saved large amounts of scarce metals and obviated the difficulties and delays attending the procurement of new parts. At the same time, many additional establishments have become familiar with the substantial reductions in replacement costs afforded by Amsco Conservation Welding.

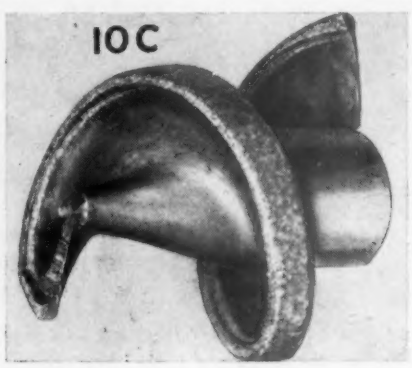


W-4. A rehabilitated manganese steel 128" crusher mantle. Amsco Nickel-Manganese Steel Filler Bars were swaged by hand to produce the proper contour, and were tacked onto the mantle, using Amsco Nickel-Manganese Steel Electrodes. Each bead was peened thoroughly. Total rehabilitation cost was $275.00.

Worn equipment parts which have been restored with highly wear-resistant Amsco welding materials often give as long service as new parts, and at considerably less cost. Substantial savings have also been obtained by hardsurfacing new parts with Amsco Welding Products which, having far higher wear resistance than the body metal, afford greatly increased service life. As replacement costs will assume added importance in the postwar period, *conservation welding* will be still more widely practiced.

A few examples of Amsco Conservation Welding are pictured. Others, with full information on Amsco Welding Products, are shown in Bulletin 941-W. Send for your copy.

W-103-B Sprockets from a tractor which were put in service at the same time. The one on the left had been rebuilt with Economy Hardface; the one on the right was a brand new sprocket. Note that the new one is worn to such an extent that it was necessary to resurface it with Economy Hardface, while the welded sprocket needed no repairs whatsoever.



10-C This brick machine auger tip served over a year after being built up with Amsco Nickel-Manganese Steel Rod and hardsurfaced with Amsco No. 459 Rod, as compared to the usual performance of only a few months before replacement. A new part costs $45.00. Total salvage cost was $31.00.

Amsco
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Illinois
FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

AMERICAN Brake Shoe COMPANY

unload the merchandise when the truck arrived at the point of destination. The shipper over the telephone advised the carrier to keep the merchandise in its garage over the night. During the night the merchandise was destroyed by fire. The question presented the court was whether the loss of the goods through no negligence on the part of the carrier relieved it from liability. The court held the carrier not liable and explained that the status of the carrier became that of a warehouseman during that night.

However, if the carrier had accepted your products before the pier burned it is liable practically as an insurer.

TRAFFIC News Digest

Central Freight Association

Docket 76663 (2).—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, molding or silica), and gravel, in open-top cars, carloads, minimum weight 90 per cent. of marked capacity of car, except when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Clyde, W. Va., to White Sulphur Springs, W. Va., 154 cents per net ton, *via* N.Y.C. (W) Gauley Bridge, W. Va. C. & O. Ry.

Docket 76667 (1).—Agricultural limestone, unburned (not ground or pulverized), also crushed stone and crushed-stone screenings, in bulk. Cancel rates on, published in N.Y.C. & St.L. R.R. Trf. GFD No. 584-J, and other individual lines' tariffs from Bluffton, O., to points in C.F.A. territory, account obsolete; classification basis to apply.

Docket 76664 (1).—Ground or pulverized limestone, unburned, carloads, minimum weight 60,000 pounds. Establish on, from Valmeyer and Prairie du Rocher, Ill., to Tecumseh, Mich., 314 cents per net ton, *via* Mo. Pac., E. St. Louis and connections.

Docket 76675 (2).—Sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, molding or silica) and gravel in open-top cars, carloads, minimum weight, 90 per cent. of marked capacity of car except when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Sargents, O., to White Sulphur Springs, W. Va., 209 cents per net ton, *via* N. & W.—Kenova, W. Va.—C. & O.

Docket 76676 (1).—Sand, in open or closed cars, subject to the same commodity description and carload minimum weights as now shown in Notes 1 and 3 of N.Y.C. R.R. Trf. 1908, and P.M. Trf. 5694-K. Establish on, from the so-called Vassar Group, viz.: Banksand, Millington, Watrousville, Juniata and McHale, Mich., to Hudson, Mich., 187 cents in closed cars and 149 cents per net ton in open cars.

Docket 76678 (1).—Crushed stone, in bulk. Cancel present rates on, from Ashtabula, O., to Chardon, O., 88 cents; Conneaut, Madison, O., 44 cents; Painesville and Perry, O., 66 cents per net ton, account obsolete; classification basis to apply.

Docket 76687 (2).—Sand (except

sand, molding, bonded (naturally or otherwise) and except ground or pulverized sand), in open-top equipment, carloads. Establish on, from Rome, O., and Rock Creek, O., to Midland, Pa., 110 cents; Pittsburgh, Pa., 121 cents; Vandergrift, Pa., 132 cents; Buffalo, N. Y., 154 cents; Erie, Pa., 121 cents per net ton.

Docket 76695 (1).—Sand and gravel and crushed stone, carloads, crushed slag. Revise rates on, between points in Ohio, for intrastate movement and from Hillsville, Shaw Jct., Walford, Midland, Sharpsville, Pa., and Weirton, W. Va., to points in Ohio to read as follows:

Miles	*Proposed*
5 miles and under	66 cents
10 miles and over 5	66 cents
15 miles and over 10	66 cents
20 miles and over 15	66 cents
25 miles and over 20	72 cents
30 miles and over 25	77 cents
35 miles and over 30	83 cents
40 miles and over 35	88 cents

Docket 76696 (2).—Sand, all kinds and gravel, in open-top cars, carloads. Establish on, from Rock Creek, O., to Youngstown, O., 88 cents; Cleveland, O., 105 cents per net ton.

Docket 76732 (1).—Gravel and sand, in straight or mixed carloads. Establish on, from Green Oak, Mich., to Cleveland, O., 160 cents per net ton, subject to Ex-parte 148 increases (suspended).

Docket 76746 (1).—Lime, common, hydrated, quick or slacked, carloads. Establish on, from Port Huron, Mich., to Sparta, Mich., 15 cents, minimum weight 30,000 pounds; 12 cents, minimum weight 50,000 pounds.

Docket 76701 (1).—Industrial sand, as described in Exhibit C. Establish on, from Quinn, Mich., to destinations in Illinois, Indiana, Kentucky, Michigan, Missouri, Ohio, Pennsylvania, West Virginia and Wisconsin, rates as shown in Exhibit C.

Exhibit C

A.—Sand, molding, bonded (naturally or otherwise), in all kinds of equipment, carloads; sand (except sand, molding, bonded (naturally or otherwise) and except ground or pulverized sand), in closed equipment, carloads.

C.—Sand, (except sand, molding, bonded (naturally or otherwise) and except ground or pulverized sand), in open-top equipment, carloads (see Note 1).

Note 1.—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in closed cars are to be assessed.

Proposed Rates from Quinn, Michigan

To (representative):	A	C
Belleville, Ill.; Evansville, Ind.....	363	363
Chicago, Ill.; Lake Ciecott, Ind.; Logansport, Ind.; Muncie, Ind.; Peru, Ind.; Buffalo, N. Y.; Massillon, O.; Orville, O.; Springfield, O.	253	253
Decatur, Ill.; Rock Island, Ill.; Springfield, Ill.	319	319
East St. Louis, Ill.....	252	352
Litchfield, Ill.; Johnstown, Pa.....	341	341
North Chicago, Ill.; Silver Creek, N. Y.; Hamilton, O.; Xenia, O...	275	275
Peoria, Ill.; Pittsburgh, Pa.; Parkersburg, W. Va.	308	308
Alexandria, Ind.; Kokomo, Ind.; Lancaster, N. Y.; Akron, O.; Dayton, O.; Newark, O.....	264	264
Columbus, Ind.; Terre Haute, Ind.; Meadville, Pa.; Zelienople, Pa.; New Cumberland, W. Va.....	297	297
Huntington, Ind.; Plymouth, Ind.; Bucyrus, O.; Lima, O.; Marion, O.; Wellington, O.; Butler, Wis..	231	220
Indianapolis, Ind.; Jamestown, N. Y.	286	286
Louisville, Ky.; Blairsville, Pa.; Charleston, W. Va.....	330	330
Adrian, Mich.; Coldwater, Mich.; Holland, Mich.; Kalamazoo, Mich.; Toledo, O.	198	160
Albion, Mich.; Battle Creek, Mich.; Grand Rapids, Mich.; Marshall, Mich.; Wyandotte, Mich.....	187	149
Cableton, Mich.; Muskegon, Mich.;		

HERE'S WHAT YOU NEED . . .

The DIXIE Non-Clog HAMMERMILL for higher Crushing Efficiency

HERE'S WHY YOU NEED IT . . .

You've got to keep up with rapidly increasing demands for crushed rock—a basic need of industry and the armed forces.

The DIXIE Hammermill with its *exclusive* moving breaker plate guarantees continuous high feed and record production on any kind of material handled.

The DIXIE eliminates costy delays, reduces power and maintenance requirements, and combines maximum capacity with high product uniformity.

HERE'S WHERE YOU CAN GET IT . . .

in 40 sizes, for fine, medium and coarse reduction.

DIXIE MACHINERY MFG. CO.
4202 Goodfellow Blvd., St. Louis, Mo.

Please send free booklet on Dixie Non-Clog Hammermills. We want to crush .....

Name .....

Company .....

Address .....

City ..... State .....

Sturgis, Mich.	209	187
Imlay City, Mich.	154	116
Cleveland, O.; St. Marys, O.; Sidney, O.; Port Washington, Wis.; Waukesha, Wis.	242	237
Cadillac, Mich.; Ionia, Mich.; New Haven, Mich.; Port Huron, Mich.; Wayne, Mich.	176	138
Flint Mich.; Lapeer, Mich.	143	110
Lansing, Mich.	165	127
St. Johns, Mich.	165	127
Niles, Mich.	220	204
Owosso, Mich.	154	110
Saginaw, Mich.	121	94
St. Louis, Mo.	352	352

Docket 76715 (1).—Industrial sand, subject to Columns A and C ratings and minimum weights as described in C.F.A. L. Trf. 575-A. Establish on, from Black's Siding, Mich., to Consolidation No. 32 (Shinnston), W. Va. (A) 330 cents; and (C) 330 cents per net ton, subject to Ex Parte 147 Increases (suspended).

Docket 76716 (1).—Industrial sand, subject to Columns A, B and C ratings and minimum weights as described in G.T. Ry. Trf. 312-T. Establish on, from Grand Haven, Muskegon and Rosy Mound, Mich., to Mt. Vernon, O., (A) 275 cents; (B) 303 cents; and (C) 275 cents per net ton, subject to Ex Parte 148 increases (suspended).

Docket 76717 (1).—Industrial sand subject to Columns A and C ratings and minimum weights as described in G.T. Trf. 312-T. Establish on, from Black's Siding, Mich.:

(Proposed rates, in cents per net ton)

	A	*C*
Bellefontaine, O.	231	220
Mt. Vernon, O., and Piqua, O.	242	237
Tiffin, O.	198	160

(Rates are subject to Ex Parte 148 increases (suspended).)

Docket 76719 (1).—Industrial sand subject to Columns A, B and C ratings and minimum weights as described in C.F.A. L. Trf. 575-A. Establish on, from Grand Haven, Muskegon and Rosy Mound, Mich., to Consolidation No. 32 (Shinnston), W. Va. (A) 341 cents; (B) 375 cents; (C) 341 cents per net ton, subject to Ex Parte 148 increases (suspended).

Docket 76741 (2).—Sand, as described in Exhibit C attached. Establish on, from Chardon, O., to Coraopolis, Pa., 143 cents *via* B&O RR, Youngstown, O., P&LE; to Vandergrift, Pa., 154 cents, *via* B&O RR Willow Grove Jct. (Millvale), Pa., PRR; to Alliance, O., 105 cents per net ton, *via* B&O RR, Newton Falls, O., NYC(W), subject to ExParte 148 increase suspended.

Exhibit C

(a) Sand (except sand, moulding, bonded (naturally or otherwise), and except ground or pulverized sand) and gravel, in open top equipment (see note) carload.

(b) On sand, all kinds (see note), and gravel, in open top equipment, carload, minimum weight 90 per cent. of marked capacity of car, except when car is loaded to cubical or visible capacity, actual weight will apply.

NOTE: Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Docket 76752 (1)—Sand and gravel, cancel, account obsolete, rate of 139 cents per net ton on, published on page 46 of B&O RR TRF. H-3485-B, from Shawneetown, Ill., to Martin and Shoals, Ind., classification basis to apply.

Docket 76759 (1)—Sand. Establish on, subject to the same commodity description and C. L. minimum weight as now applicable in connection with rates in effect from points shown below, as published in NYC Trf. 1908 and PM TRF 5694-K, to Plymouth, O. (Rates in cents per net ton.)

Proposed Rates from So-called Vassar Group.:

	(*)	(†)
Banksand, Mich.; Millington, Mich.; Watrousville, Mich.; Juniata, Mich.; McHale, Michigan	209	187
Quinn, Michigan	231	220

*—Closed cars.
†—Open cars.

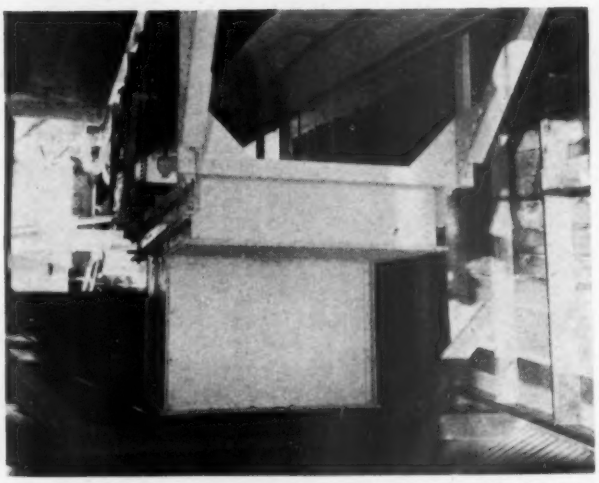
Docket 76767 (2)—Lime, common, hydrated, etc. Establish an exception to Rule 10 of the Official Classification No. 130-C, as follows: Mixed carloads of lime, common, hydrated, quick or slaked and plaster, calcined, the plaster, calcined, not to exceed 25 per cent. of the aggregate weight on which charges are assessed, will be charged at actual weight and at the applicable rate for each of the respective commodities, subject to the highest minimum weight attaching to any of the rates applied on the respective commodities, deficit if any to be paid for at the rate applicable on the highest rated article in the mixture. Note—Where alternative rates and minimum weights apply on any commodity in the mixture the charges for the weight of such commodity in the mixed carload shall be obtained by use of the rate applicable thereon at the lowest minimum except that the charge for such commodity shall not exceed that which would be assessed if taken as a straight carload.

Docket 76791 (2)—Lime, viz.: Common hydrated, quick or slaked, also agricultural and fluxing, CL minimum weight

A SERVICE RECORD in the Making for this MERRICK Weightometer!

9 Years in operation

MILLIONS of tons weighed



MERRICK Weightometer operating with conveyor loading belt at Pioneer plant.

...and right on the job for PIONEER!

The Pioneer Sand and Gravel Company, of Steilacoom, Washington, is working one of the largest and best deposits known.

When their new plant was built in 1936, a MERRICK Weightometer was installed to record the weights of material passing by belt conveyor from the docks to barges.

In 1942 this plant was enlarged and improved to handle an increasing output—but the original MERRICK Weightometer, which has already checked several *million* tons of materials, is "still doing business at the old stand!"

View of Pioneer shipping layout, with loading belt conveyor, and barges at dock.

Such long service life, with low operating and maintenance costs, is typical of MERRICK Scales. Producers who have these precision machines "on the payroll," well know their accuracy and working ability.

Write for Bulletin No. 375

MERRICK SCALE MFG. CO. **Passaic, N. J.**

30,000 lbs. and 50,000 lbs. Establish on, from Speed, Ind., to stations in Ind., rates on the basis of the distance scale provided for in ICC Docket 16170, plus 10 per cent for a 30,000 lb. min., and 80 per cent. thereof for a 50,000 lbs. min. (see Exhibit E).

Exhibit E

Lime, viz.: Common, hydrated, quick or slacked, also agricultural and fluxing.
A—Minimum weight 30,000 pounds.
B—Minimum weight 50,000 pounds.

	Proposed Rates I.C.C. Dkt. 16170 Scale (In cents per cwt.)	
To Points in Indiana:	A	B
Highlands, Griffin, Palmer.	17	14
Boone Grove, Clanricarde, Wilders, Aldine, Bass Lake	17	13
Ora, Monterey, Leiter, Athens, Akron, Disko, Laketon, Servia, Bippus, Huntington, Simpson ...	16	13
Rochester, Markle, Uniondale, Kingsland, Toscin, Magley, Preble	15	12

Docket 76863 (2)—Dolomite, roasted, CL, minimum weight 100,000 lbs. Establish on, from Narlo, Maple Grove and other northwestern Ohio origins to Denver, Minnesota, and Pueblo, Col., 805 cents per net ton.

Docket 76879 (1)—Slag, crushed or crushed commercial (not granulated) a product of iron and steel blast or open hearth furnaces, in bulk, in closed cars, CL. Establish on, from Hamilton, Ohio, to Alton and E. St. Louis, Ill., 264 cents per net ton.

Docket 76881 (2)—Industrial Sand as described in Exhibit E below. Establish on, from Gary-Michigan City Group, viz.: Gary, Porter, Calumet, Michigan City, Millers, Dune Park, Willow Creek, Crisman, Crocker, Ind., and Oak Hall, Michigan to Zeigler, Ill., 285 cents per net ton.

Exhibit E

(A) Sand, moulding, bonded (naturally or otherwise), in all kinds of equipment, carloads. Sand (except sand, moulding, bonded (naturally or otherwise) and except ground or pulverized sand), in closed equipment, carloads (see Note 3), (C) Sand (except sand, moulding, bonded (naturally or otherwise) and except ground or pulverized sand) in open top equipment, carloads (see Notes 1 and 3).

Note 1—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in closed cars are to be assessed.

Note 3—The following provision where currently in effect on other sand than sand, moulding, bonded (naturally or otherwise), will be continued: Will not apply on sand processed beyond washing or screening for decolorizing, filtering or water softening.

Illinois Freight Association

Docket IRC 511v201A.—Gravel, sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, molding or silica), in open-top cars, from Munger, Ill., to Decatur, Ill.: To cancel present rate of $1.17 per net ton account no movement.

Docket IRC 511-202.—Stone, broken or crushed, carloads, from Lewiston, Ill.:

To (representative):	*Present*	*Proposed*
Fiatt, Ill.	*	66 cents
Edwards, Ill.	*	88 cents
Canton, Ill.	*	77 cents
Victoria, Ill.	*	99 cents

*No through rates.

Docket IRC 511-203.—Sand, except asbestos sand and silica sand), carloads, from Cape Girardeau and Marquette, Mo., to stations on Mo. Pac. R. R. in Illinois:

(In cents per net ton)

To (representative):	*Present*	*Proposed*
Wolf Lake, Ill.....	*	83
Murphysboro, Ill.	*	99
DeSoto, Ill.	*	105
Pollard, Ill.	*	123
Mt. Vernon, Ill.	*	110

*Combination.

Docket RC 511-204.—Slag, carloads, commercial, crushed, in open-top cars, from Chicago, Ill.

To:	*Present*	*Proposed*
Cook, Ind. .....66 cents		84 cents
Danville, Ill. .....69 cents		97 cents
Highlands, Ind. ....66 cents		84 cents
No. Hayden, Ind. and St. Johns, Ind....66 cents		84 cents

Docket IRC 511-205.—Slag, in open-top car equipment in carloads, from Bellwood, McCook and South Chicago, Ill. To cancel rates as now published in specific item in N.Y.C. Tariff 1906, I. C.C. 277, page 13, to Danville, Ill., Highlands, No. Hayden, Ind., account no movement.

RYERSON STEEL IN STOCK

Call Ryerson when you need steel—any kind, shape, or size. Large stocks are available at ten convenient plants. Ask for a Ryerson Stock List—your guide to quick shipment of steel.

Principal Products Include:

Bars • Shapes • Structurals • Plates • Sheets
Floor Plates • Alloy Steels • Stainless Steel
Shafting • Screw Stock • Wire • Mechanical
Tubing • Boiler Tubes • Reinforcing Steels
Tool Steels • Babbitt • Nuts • Bolts • Rivets
Welding Rod • Etc.

JOSEPH T. RYERSON & SON, Inc.

Plants at:

CHICAGO, MILWAUKEE, ST. LOUIS, DETROIT, CINCINNATI, CLEVELAND, BUFFALO, BOSTON, PHILADELPHIA, JERSEY CITY

More Yardage with Less Labor

Here is a small Sauerman Scraper (¼ cu. yd. size) moving sand from stockpile to concrete products factory. One man running machine two hours per day supplies plant with sand, a job that formerly kept three men hauling sand 10 hours a day.

This Sauerman Slackline Cableway digs down to the bottom of a deep gravel deposit and hauls the material to top of plant at cost of few cents per cubic yard.

The economical Sauerman way

GREAT savings in man-hours are being made by using Sauerman Power Scrapers and Slackline Cableways in sand and gravel excavation, stockpiling and other material-handling jobs where the long operating range of these machines can be employed to advantage.

With one man at the controls, and with a relatively small expenditure of power, a Sauerman machine will dig, haul and automatically dump a large hourly tonnage of any class of material. Moreover, cost of the equipment is moderate and upkeep is simple.

Tell us about your excavating and material-handling problems. If we think Sauerman equipment will meet your particular needs, we will offer suggestions and send you our catalog.

SAUERMAN BROS., INC.

534 S. Clinton St., Chicago 7, Ill.

Docket ORMV 511-22. — Limestone, crushed, ground or pulverized, carloads, minimum weight 60,000 pounds, from Hannibal, Mo., to Cairo, Ill., and Paducah, Ky., when destined Southern Freight Association territory.

Present—To Cairo, Ill., $1.24 to E. St. Louis, Ill., $1.16 beyond. To Paducah, Ky., $1.24 to E. St. Louis, Ill., $1.96 beyond.

Proposed—$1.70 net ton.

Southwestern Freight Bureau

Docket 34893 (W. T. L. C. Appln. D-11-107) (1). — Cement, Chanute, Kan., to points in the Southeast. To establish rates on cement, viz.: hydraulic, masonry, mortar, natural or Portland, in straight or mixed carloads, minimum weight 50,000 pounds, from Chanute, Kan., to destinations in Florida, Georgia, North and South Carolina and Virginia named in Item 90 of S. W. L. Tariff 169-F, I.C.C. 3579, based on mileage scale prescribed by the Interstate Commerce Commission in Docket 16845 (144 I. C. C. 585), extended beyond 1,220 miles by adding 1 cent for each 40 miles, and scale arrived at to be increased 10 per cent. In figuring distances the formula prescribed in Docket 16845 is to be used.

Docket 34914 (2). — Cement, Ada, Okla., and southern Missouri to Air Base Spur Kan. To establish to Air Base Spur, Kan., the same rates as in effect to Great Bend, Kan. on the A. T. & S. F. on cement as described in W. T. L. Tariff 133-J.

Docket 42541 (shippers).—Limestone, crude, fluxing, foundry, or furnace, in bulk, in open-top equipment, carload, minimum weight 90 per cent. of marked capacity of car, etc., from Rambo, Pa., to Johnstown, Pa., $1.39 and to Buffalo and Lackawanna, N. Y., $1.79 per gross ton. Reason: Comparable with rates applying from other points.

Docket 42543 (shippers). — Cement, carloads, description and minimum weight as per N.Y.C. R. R. Tariff No. I. C. C. 298, from Hudson, N.Y. to Cazenovia, N.Y., for L. V. R. R. delivery 15 cents per 100 pounds in lieu of present 6th class rate of 21 cents. Reason: Comparable with rates applying from and to other points.

Docket 42548 (shipper).—Limestone, crude, fluxing, foundry and furnace, carloads, minimum weight 90 per cent. of marked capacity of car, etc., from Inwood, W. Va., to Columbia, Pa., $1.28 per gross ton, applicable in open-top equipment, in lieu of present rate of 19 cents per 100 pounds. Reason: Comparable with rates applying from and to other points.

Docket 42555 (shipper). — Cement, common, hydraulic, masonry, mortar, natural and Portland, carloads, minimum weight 50,000 pounds, except when for carrier's convenience cars of less capacity are furnished, in which case the minimum weight will be the marked capacity of the car furnished but in no case less than 40,000 pounds, except that on cement in bulk, the minimum weight will be 50,000 pounds. (Except as otherwise indicated) Cement clinker, carloads, minimum weight 50,000 pounds (in straight or mixed carloads), to Morristown and Erie railroad stations Roseland and and including Morristown, N. J., from Hagerstown, Md., (to apply from Security, Md., for account of B. & O. and W. M. Ry.) Martinsburg, W. Va., Union Bridge, Md., 18 cents, Martins Creek, Pa.—N. J. 11 cents, Swedeland, Pa., 13 cents and York, Pa. 16 cents per 100 pounds, in lieu of present class rates. Reason: Comparable with rates applying from other points.

Docket 42557 (shipper).—To amend Agent Curlett's Tariff No. 89-A, I. C. C. A-633, providing for rates on plaster and related articles from Trunk Line producing points to Southern destinations by the addition of Lansdale, Pa., as a point of origin on the Reading basis. Reason: Comparable with rates applying from other points.

Western Trunk Line New Applications

Docket D-11-109.—Proposed—Cancel the rates on cement and dry building mortar, published in Item No. 570-A, Supplement No. 39 to Mo. Pac. Tariff No. 1221-M and similar items in other lines tariffs, permitting mileage scale rates published in W.T.L. Tariff No. 132-J to apply.

Docket D-26-157. — Lime, common, carloads to St. Paul, Minneapolis, Minn. Transfer, Minnesota, Proposed — From Glen Park, Mosher, Ste, Genevieve, Mo., E. St. Louis, Ill., 16 cents per 100 pounds; from Springfield, Mo., and Group 18 cents per 100 pounds.

Docket E-41-659. — Stone, crushed; stone, rip-rap; stone, rubble, of irregular random widths, lengths and thicknesses, not trimmed or tooled, not suitable for manufacture, cutting, or dressing, actual weight at origin point not in excess of $4.50 per ton of 2,000 pounds; chats (lead or zinc mine refuse); strippings of stone quarries, from origins named in Item 4105, W.T.L. Tariff 50-R, to Group 27 points on the C.M.ST.P. & P. in item 4105 of W.T.L. Tariff 50-R. Proposed—18 cents per 100 pounds.

Rugged
is the Word for PLAT-O

Take a good look at a Plat-O Vibrating Screen and you can readily see why more and more aggregates producers are specifying Plat-O to handle their toughest grading jobs.

At every point in design and construction, the emphasis has been placed on simplicity and strength to assure dependable, low-cost performance . . . hour after hour, day after day.

For your toughest screening operations, there's a sturdy, rugged Plat-O Vibrating Screen that will give you more accurate grading and more profitable performance. Choose from a complete line of one, two, three and four-deck models ranging in size (actual screening area) from 2½' x 4' to 5' x 12'.

DEISTER MACHINE COMPANY
Fort Wayne 4, Indiana

PLAT-O
by DEISTER

E. R. Galvin

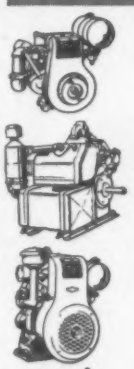
The Tyson Bearing Corporation, Massillon, Ohio, manufacturer of cageless tapered roller bearings announces for 1945 a program of product and sales expansion, according to information received from E. R. Galvin, president. Although the company is a producer of many parts for late model aircraft and there will be no reduction in the effort to maintain such production at the highest possible level so long as the war lasts, plans are being formulated and prepared so that Tyson will be ready to assume the responsibilities of peace-time employment when they arise. The company's post-war plans contemplate a complete line of cageless tapered roller bearings and the development of a world-wide distributing organization. Changes in and additions to plant facilities will be necessitated.

ELMER C. SALZMAN, vice-president in charge of sales for Robins Conveyors Incorporated, Passaic, New Jersey, engineers, manufacturers and erectors of materials handling machinery, recently arrived in Rio de Janeiro on company business. His visit, of about one-month duration, will take him to the property of the Rio Doces mine where Robins is preparing a system for conveying iron ore. Mr. Salzman will also visit the offices of Industrias Murray S. A., Rua da Constituicao 37, Rio de Janeiro, who are agents in Brazil for Robins Conveyors Inc.

Pioneer Engineering Works, Incorporated, of Minneapolis, recently announced the appointment of the Martin-Roasa Tractor & Equipment Company of Cedar Rapids, Iowa, as distributor for the territory of eastern Iowa and ten counties in northeastern Missouri.

DIAMOND-BORED RODS

Another "HIDDEN VALUE" IN ALL WISCONSIN *Air-Cooled* ENGINES



Absolute uniformity and close-tolerance fit of all connecting rod bushings are direct results of the unique machine operation illustrated above. Each rod is rigidly locked in precisely the same position, and diamond-pointed bits machine both ends of every rod with uncanny smoothness and perfect mechanical precision. All of this helps to produce a quiet, smooth-running engine, designed and built for heavy-duty service all the way through.

All of which adds up to highly satisfactory *end use* on your equipment.

Most H.P. per pound

WISCONSIN MOTOR Corporation

MILWAUKEE 14, WISCONSIN, U. S. A.

World's Largest Builders of Heavy-Duty Air-Cooled Engines

BROWNHOIST BUCKETS

Designed and built by Industrial Brownhoist Corp. do a better job because, 1) Large Sheaves reduce rope wear, 2) Heavy Carbon - Steel digging lips take deep, clean bites, 3) Extra-sturdy construction insures long life. Write for complete facts to Industrial Brownhoist Corporation, Bay City, Michigan. Offices in New York, Philadelphia Cleveland and Chicago.

BROWNHOIST BUILDS BETTER BUCKETS

The Spotlight

IS ON

THE

GILSON MECHANICAL TESTING SCREEN

The compact, ingeniously designed GILSON TESTING SCREEN assures a controlled product guaranteed to meet specifications. Test samples of crushed stone, gravel, slag, etc. are carefully sized through five test screens by a smooth and quiet vibration, separating 100 pounds of sample in 5 minutes or less. Eliminate errors that happen through "sizing by guess"—write today for complete information on the GILSON TESTING SCREEN.

THE GILSON SCREEN CO.

P. O. BOX 186 MERCER, PA.

George W. Codrington, a vice-president of General Motors Corp., scans report at annual meeting of Diesel Engine Manufacturers Association. Looking on are: E. J. Schwanhausser (left), Worthington Pump & Machinery Corp., a newly elected vice-president of DEMA; and Robert E. Friend (right), Nordberg Mfg. Co., re-elected to the Association's presidency.

Robert E. Friend, president of Nordberg Mfg. Co., was re-elected to the presidency of the Diesel Engine Manufacturers Association when that organization held its annual meeting Dec. 6 at Cleveland, Ohio.

Two new vice-presidents were also elected. They are F. H. Kilberry, who heads Atlas Imperial Diesel Engine Co., and E. J. Schwanhausser, vice-president of Worthington Pump & Machinery Corp.

Robert H. Morse, Jr., general sales manager of Fairbanks, Morse & Co., was re-elected DEMA's treasurer. Harvey T. Hill continues as executive director.

Four new directors of the association were named as follows: Norris H. Schwenk, president of Busch-Sulzer Bros. - Diesel Engine Co.; Charles E. Brinley, chairman of the board, Baldwin Locomotive Works; Charles G. Cox, vice-president of Enterprise Engine & Foundry Co., and Mr. Kilberry.

Continuing as directors are George W. Codrington, vice-president General Motors Corp. and general manager Cleveland Diesel Engine division; Gordon Lefebvre, president and general manager Cooper - Bessemer Corp., and Messrs. Friend, Morse and Schwanhausser.

A new activity of the association —that of keeping a watchful eye on proposed legislation that may affect the industry favorably or adversely —was announced by Mr. Hill. He stated also that DEMA expected to issue early in 1945 a booklet describing the Diesel engine and the industry that produces it.

Mr. Codrington was luncheon host to the members at the Hollenden Hotel, after which he showed them through the plant he supervises.

Protection from Burn-Outs with

PYRASTEEL

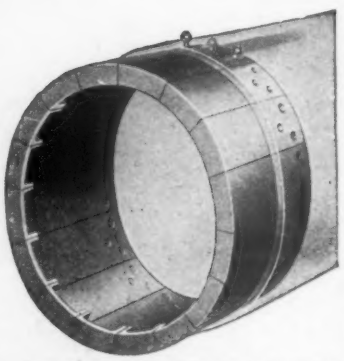
KILN ENDS

Why run the risk of kiln-end "burnouts" that cause serious shutdowns and costly repairs:

Play safe by installing PYRASTEEL Segmental Kiln Ends at both the *discharge end*, as illustrated . . . and also at the *feed end* of your cement kilns.

PYRASTEEL gives long and dependable service at high temperatures . . . as proved in scores of installations throughout the industry.

Write for Bulletin of this Heat-Resisting Alloy



Showing discharge end of cement kiln fitted with PYRASTEEL Segmental Kiln Ends.

Unit segments are easy to install or replace

CHICAGO STEEL FOUNDRY COMPANY

PYRASTEEL for high temperatures

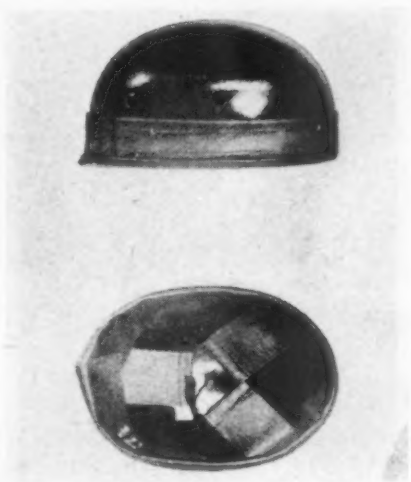
KEDZIE AVE & 37TH ST. CHICAGO 32, ILL. Makers of Alloy Steel for 30 Years

EVANSTEEL for strength

NEW MACHINERY and SUPPLIES

● Head Protector

Portable Products Corporation, Pittsburgh, are now manufacturing a new type of head protector guarding the head against injuries. Known as "Beanie" caps, they are made of molded fibre and employ a soft, flexible band which fits any shaped head comfortably. The cap lining and hammock are arranged so as to cushion the blow. Extremely light-weight, weighing approximately



"Beanie" Cap.

6 ozs., "Beanies" are particularly valuable to garage mechanics working under an automobile, or to men who must enter and repair the fire-box of a locomotive. Packing house employees wear them to guard the head against moving meat hooks. In general, Beanies may be worn industrially where protection of the skull and scalp is paramount.

The manufacturer will furnish further information and prices on request.

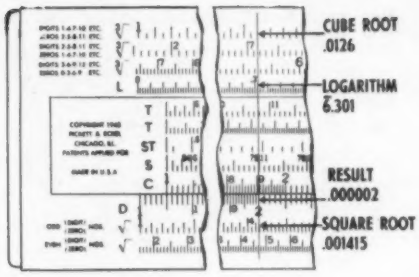
● Car Puller

The Clyde Iron Works, Duluth, Minnesota, announce the new Model "C," Clyde Car Puller is a small, compact, sturdy, self-contained unit with all gearing and motor completely enclosed. All working parts are carefully machined to produce a smooth running, quiet and efficient machine. The capstan head is finished to prolong the life of the rope and is designed to obtain the maximum line pull with little effort on the part of the operator. A snubbing post is provided for holding the load. The new design has the capstan head at a more convenient height for the operator; rope can lead in any direction and there are no protruding parts to follow the rope. It is claimed that with this model greater efficiency is obtained with less horsepower. The car puller is made in four sizes from three to ten horsepower.

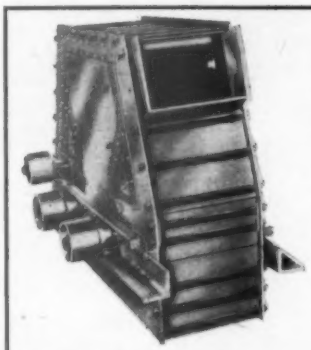
Car puller.

● Decimal Locator

Pickett & Eckel, 53 West Jackson Boulevard, Chicago, offer a new Decimal Point Locator and Slide Rule that will determine the decimal point mechanically in involved expressions up to 19 places, yet is so simplified that persons with a very limited mathemati-



Decimal locator slide rule.



This new double-impeller crusher will produce from 100 to 150 tons per hour of material passing 80% through a 1-inch mesh.

It's compact in design, light in weight (12 tons), and saving in power (from 50 to 75 horsepower drives it). And, above all, it's

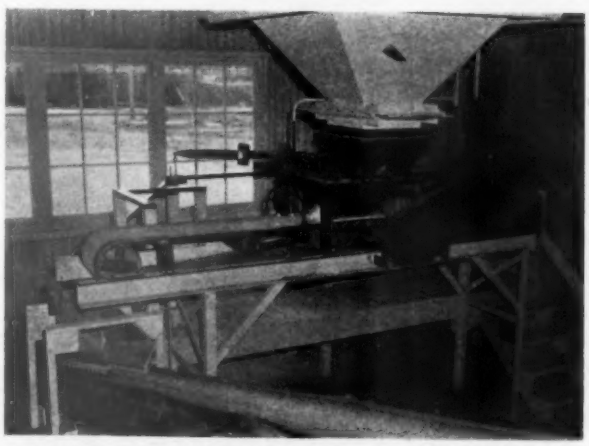
Adaptable to portable or stationary work.

Write for complete information.

NEW HOLLAND MACHINE CO.

NEW HOLLAND, PENNSYLVANIA

"We Point with Pride"



SCHAFFER Poidometer weighing and feeding dolomite to rotary kilns at Ludington, Mich., plant of Dow Magnesium Co.

to the splendid record of SCHAFFER POIDOMETERS now serving the same plant, one of several shown

SCHAFFER Poidometers are pointing the way to higher production and profits in handling crushed, granular or pulverized materials.

Fast, automatic, and extremely accurate, Poidometers are widely used for speeding up material weighing and proportioning.

They are durable machines, and insure years of continuous service, when properly taken care of. Available with remote control recording and operating devices. Repair parts available for machines now in service.

Write for Catalog No. 5

SCHAFFER POIDOMETER CO. 2828 Smallman St. Pittsburgh (22), Pa.

Manpower Shortage?

FORGET IT
USE

GODFREY
sand-gravel-crushed stone
CONVEYOR

Why complain about the shortage of labor? DO something about it! Remember, there is no equal in the world to a Godfrey crushed stone, sand, or gravel conveyor. Built for a maximum of speed, efficiency and durability, these conveyors easily handle the work of several men. Listed below are 3 popular models.

BUCKET CONVEYOR

Easily operated by one man, and truck driver saves time in loading trucks, and can be pushed into proper position with the aid of a truck.

TROUGH BELT CONVEYOR

35-foot frame with concave belt that keeps material in center of trough. Especially built for loose material—sand, gravel, etc.

DRAG PORTABLE CONVEYOR GP-12

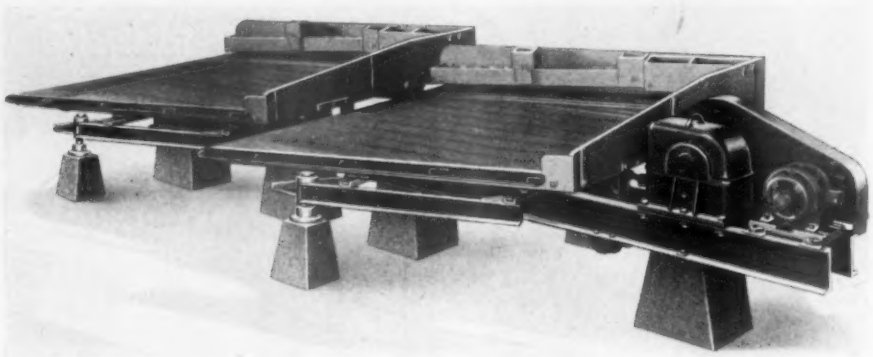
This solid steel conveyor with electrically-welded joints and self-locking manually-operated hoist has a capacity of 60 tons per hour. Especially adapted for handling sand, gravel, crushed stone.

GODFREY CONVEYOR CO.
ELKHART 6, IND.

cal background can evaluate and point out problems containing cube root, square root, log and trig factors. It is 11 inches long, 2 inches wide, 1/8 inch thick. Constructed of Sorex tag lithographed, varnished and bonded. Comes complete in box with pocket carrying case and an illustrated instruction manual. The manual gives rules for operating the device, and presents the mathematical theory of mechanical decimal point location.

● Washing Table

The Deister Concentrator Company, Fort Wayne, Indiana, offers the No. 10 Concentro Duplex washing table, a new heavy duty machine which represents this company's latest development of diagonal deck equipment. It offers multiple treating surfaces operated from one head motion. Each deck is complete in itself and distinct in its functions. Each has its individual tilting subframe and main frame, permitting independent adjustment for end and side tilt, and also independent stroke adjustment. The principal assemblies which together constitute the Concentro Duplex washing table are: the ruggedly constructed, fully enclosed, running-in-oil and fully adjustable head motion; the strongly designed, adequately braced, cypress diagonal decks covered with either linolcum or rubber, and to which are attached either wood or rubber riffles; the tilting sub-frames, which guarantee perfect and permanent alignment for the decks; and the heavy main frames, forming the "backbone" of the complete machine, to which all operating parts are shop aligned and assembled. The Concenco Duplex Washing Table will treat any granular materials such as coal, sand, gravel, etc., requiring the usual cleaning or separations demanded in the most exacting commercial practice. It readily treats sizes from 2 inches to 0. A given size may be treated as a split feed by the multiple decks of the complete machine or, where tonnage is small, each deck may handle a separate size with maximum efficiency. Any foreign or waste materials, presenting a specific gravity difference from the relatively free particles of desired product material, are automatically and economically removed during the operation. The new Concenco Anti-Friction Bearing Head Motion, an important feature of this table, is rugged, compact, dependable, mechanically simple and highly efficient. It is smooth and quiet yet delivers a strong differential "kick" to contribute materially in the handling of larger tonnages. Heavy, anti-friction, self-aligning SKF bearings, all operating in a circulating bath of oil, are used in Concenco Head Motion. The net result is a low power cost per ton of material treated.



New heavy-duty diagonal-deck washing table.

● Condensate Remover

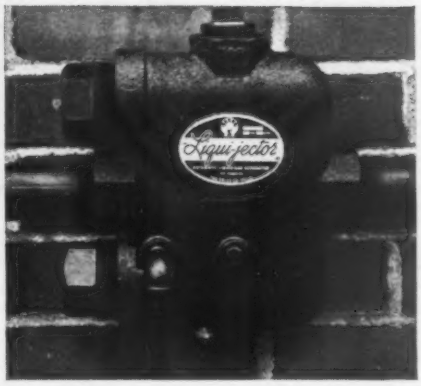
A revolutionary principle for automatically and continuously removing condensate (droplets, slugs or mist) from compressed air and gas lines is announced by Selas Corporation of America, Philadelphia — and is embodied in a new family of "Liqui-jectors," adaptable to air and gas lines up to 1¼" pipe size and normal line pressures. No moving parts are involved, and no cocks, traps or shutoffs are required in the drain line (which is open to the atmosphere). Action is entirely automatic and continuous through two porous ceramic tubes—one in-

PERFORATED METAL SCREENS
FOR SAND, GRAVEL STONE, ETC.

Manufactured exactly to your specifications.

Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.
Prompt Shipment

CHICAGO PERFORATING CO.
2435 W. 24TH PLACE CHICAGO, ILL.
Telephone CANAL 1459



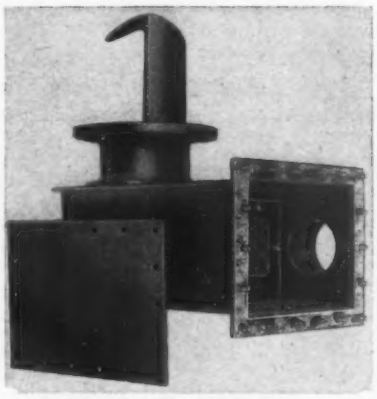
Condensate remover.

herently water-repellent, the other water-permeable but air-impervious. The product already has found usefulness in connection with pneumatic tools, atmosphere gas generators, compressors, air-actuated control systems, vapor quench lines, spray and blast equipment, and other pneumatic apparatus in which moisture may corrode the equipment or damage the work.

The unit shown in the accompanying illustration, Model A-5100-1, accommodates lines up to 1¼" pipe size with line pressures up to 100 P.S.I. Other units are now being perfected to handle different demands on different sized lines.

● Delivery Chamber

The "Evertite" Delivery Chamber, a product of American-La France-Foamite Corporation, Elmira, New York, provides an easy means of applying a blanket of fire-smothering foam to burning oil surfaces, yet prevents release of tank pressure. A glass diaphragm seals the inlet of the Firefoam passageway to the tank. This permits the top plate of the delivery chamber to be removed for painting or for diaphragm inspection, without releasing any tank vapors.



Delivery chamber.

Lip of frame gives strong support to resist tank vapor pressure. Pressure of Firefoam at time of fire is adequate to cause breakage, as diaphragm ruptures at very low pressure from upper side. A newly designed Firefoam deflector, permanently attached to the throat, eliminates any special baffle installation. The discharge is deflected with a rotary motion against tank shell and down to the oil surface without undue disturbance of the liquid, or foam breakdown. A 6-inch adapter flange may be provided for mounting over opening cut in tank shell, or the tank manufacturer may furnish a studded flange for welding around the opening. If chamber is to be installed at a later date, a blind flange may be bolted over the opening.

TRADE NOTES

O. G. Gruender

THE Norberg Manufacturing Company, Milwaukee, announces the appointment of OSCAR G. GRUENDER as consulting engineer of its crusher and screen division. He will have offices in the Wisconsin Tower Building in that city. For 36 years Mr. Gruender has been engaged in the design, development and building of crushing machinery. He started with the Smith Engineering Works in Milwaukee in 1908 and was employed in the shop and engineering departments of that company until he left in 1913 to become associated with the Symons Brothers Company. From 1915 to 1924 he was general works manager of Chalmers & Williams Company of Chicago Heights, Illinois, which company manufactured the Symons line of crushers at that time. In 1924 he rejoined the Symons Brothers Company and was with that organization until it was acquired by Nordberg in 1928. During most of the period since he has been with Nordberg he has been general manager of the crusher division. D. A. CHEYETTE has been appointed general manager of that division.

Davey Compressor Company of Kent, Ohio, has announced the appointment of Cliff Miller Machinery Company, 215 North Tweifth Street, Omaha, Nebraska, as a new franchise dealer for Davey products, which include portable and stationary compressors, heavy-duty truck power take-offs and pneumatic saws.

WILLIAM P. MICHELL has been appointed assistant chief engineer of Mack Trucks, Incorporated, it was recently announced by L. C. Josephs, Mack vice president and chief engineer. Mr. Michell recently returned from Great Britain where he had been serving in an advisory capacity on military truck transport at the invitation of the British government. Mr. Michell began his engineering career with the Whitlock Company in Hartford, Conn., before going overseas as a first lieutenant in World War 1. After the war he returned to Whit-

IT COSTS NO MORE TO USE THE BEST

REPLACE WITH "Indian Brand"

Shovel Dippers
Dipper Teeth
Shovel Treads

Crusher Jaw Plates
Mantles—Concaves
Bowl Liners
Roll Shells

Pulverizer Hammers
Grate Bars—Breaker Plates

Ball Mill Liners
Screen Plates

The Frog, Switch & Mfg. Co. CARLISLE, PA.

ESTABLISHED 1881

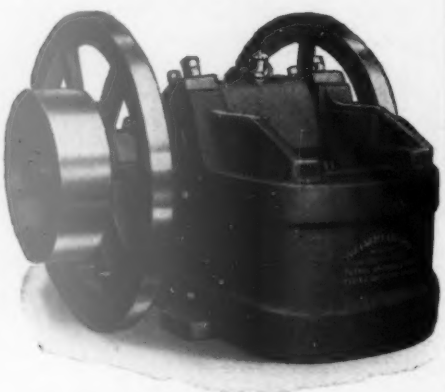
POST WAR CONSTRUCTION CAN BE DESIGNED NOW

Types of Projects Solicited
SILOS — "Sliding Form" Method
STORAGE — for all Granular materials
BUILDINGS OF ALL TYPES—
Industrial or Commercial
RETAINING WALLS
RESERVOIRS
PUMPING STATIONS
CEMENT PLANTS
YOU CAN PROFIT BY OUR TWENTY-FIVE YEARS EXPERIENCE
Our engineers and construction crews are available for quick construction.

E. C. MACHIN COMPANY
BUILDERS
Commonwealth Building — Allentown, Pa.

FARREL BACON
CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service.



EARLE C. BACON, Inc.
17 John St. New York, N. Y.

lock, eventually going with Ace Motor Corp. as shop superintendent. He joined Mack in 1923 as a shop engineer and through a series of promotions became assistant to the chief engineer in 1937.

In a ceremony conducted on a decorated platform in the erecting shop, employees of the Bucyrus-Erie Company at Evansville, Indiana, on November 29 celebrated winning their first Army-Navy "E" award.

N. R. Knox, president, was chairman of the ceremony, which included addresses by W. L. Little, vice-president and Lieut.-Col. Thomas G. Miller, chief of the military supplies division of the Engineers Corps at Louisville, Kentucky.

Lieut.-Col. Miller presented the award, which was accepted by E. W. Estes, manager. Presentation of token lapel pins to the four employees with the longest service and the spokesman for the employees was made by Lieut. Com. F. G. Healy, director of the Evansville Shipyard.

Employees who received the pins were: William J. Barnett, Louis B. Bentzen, Powell L. Fulkerson, Miss Mary T. McCue and Julius Kasper. Mr. Kasper spoke on behalf of the employes.

There's a Brooks LOAD LUGGER for your Material Handling operations

QUARRY WORK
ROAD BUILDING
FEEDING CRUSHERS
STRIPPING OVERBURDEN

Standard LOAD LUGGER with Tilt-type One-Piece Bucket shown above.

Skip-type Bucket, Enclosed Container and other special buckets available.

Also furnished with TrucKrane Boom Attachment for hoisting, etc.

IF you want to make 1945 a year of promise and a chance for profit, then you must save manpower and conserve equipment.

With a Load Lugger mounted on your truck chassis and 5 to 10 dump buckets in use on your hand-loading jobs, you can increase hauling efficiency, reduce trucking costs and go a long way toward solving your labor shortage problems.

Write for Load Lugger Catalog No. 44 and TrucKrane Bulletin No. 43-B . . . detailed information of the Brooks System.

Brooks EQUIPMENT AND MFG. CO.
101 Davenport Road, Knoxville 8, Tennessee
Distributors in All Principal Cities

Trade Literature

The pieces of literature listed below can be obtained direct from the manufacturers named, or requests can be addressed to Pit and Quarry's "Service to Readers" Department.

SCHRAMM AIR COMPRESSORS FOR QUARRIES. 8 pages. Schramm, Inc., West Chester, Pennsylvania.

DENVER PULP DENSITY SCALES. 8 pages. Denver Equipment Company, Denver, Colorado.

SHUNTFLO METERS FOR STEAM, AIR, GAS. 8 pages. Builders-Providence, Inc., Providence, Rhode Island.

GET THE MOST FROM YOUR SYMONS CONE CRUSHER. 24 pages. Nordberg Manufacturing Company, Milwaukee.

AMERICAN HI-TORQUE MOTOR PULLEYS. 8 pages, (Catalog HT-44). American Pulley Company, Philadelphia.

AGITTAIR FLOTATION MACHINE. 24 pages, (Bulletin 421). Galigher Company, Salt Lake City.

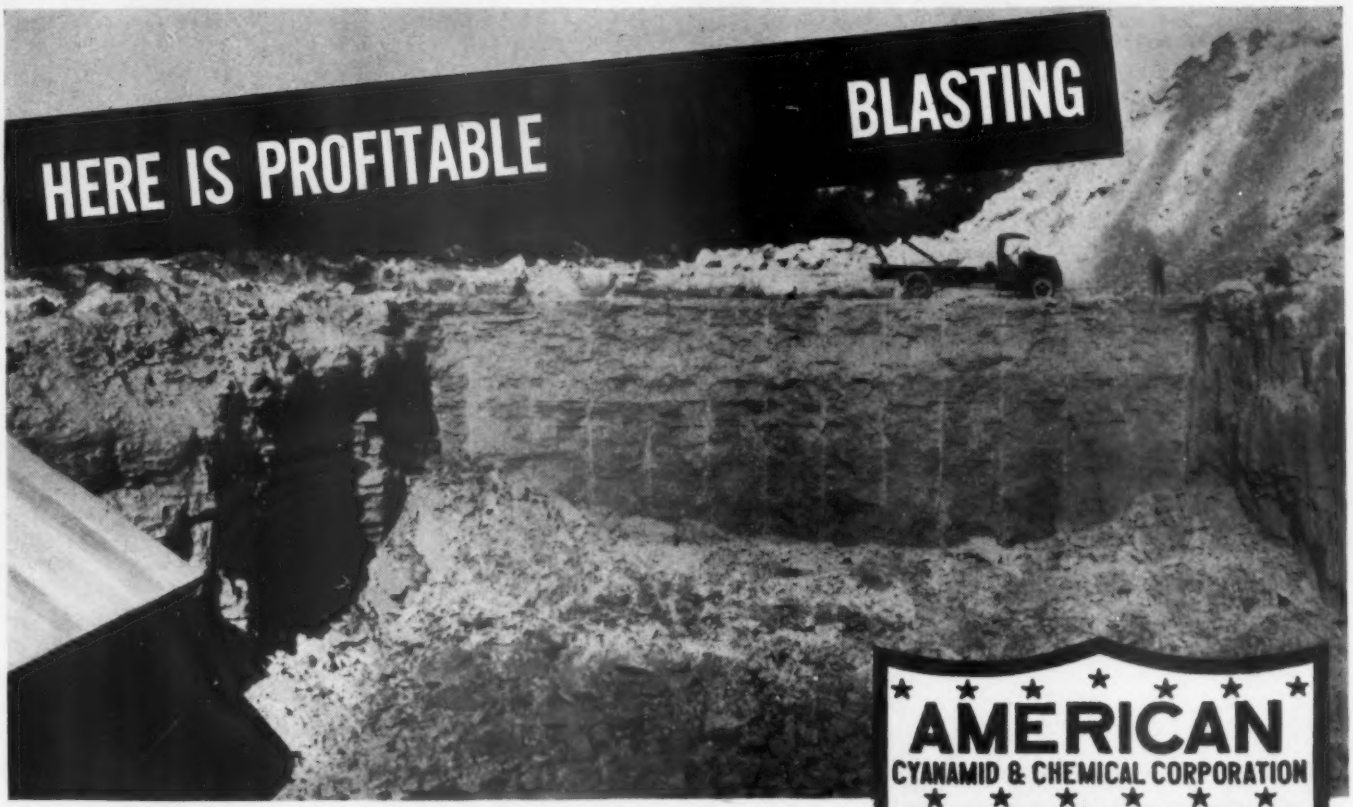
BOTTOM-DUMP WAGON AND HI-SPEED TRACTOR. 4 pages, (Bulletin Z-2132). Heil Company, Milwaukee.

As part of a widespread plan of expansion, Marion Metal Products Company, Marion, Ohio has purchased the entire plant and assets of the Defiance Pressed Steel Co., also of Marion, according to an announcement by G. E. Herr, vice-president and general manager.

The manufacture of truck bodies was started by Marion Metal Products Company in the early twenties. Various models of hydraulic hoist and dump bodies were added until the needs of practically every kind of body and hoist operation can now be met.

The election of Hamilton O. Penn of New York as a director of the Tyson Bearing Corporation was recently announced by E. R. Galvin, president.

Mr. Penn, who heads the H. O. Penn Machinery Company of New York, brings a rich experience in the construction field to the Tyson directorate. Among his many activities, Mr. Penn, during the early critical days of the war, was a dollar-a-year man with the War Production Board, in charge of the inventorying of all used construction machinery and making it available for war work. At the present time he is executive vice-president of the Associated Equipment Distributors of America and is a director of the Bronx County Trust Company.



AMERICAN
CYANAMID & CHEMICAL CORPORATION
EXPLOSIVES

—A Combination of Engineering Plus

The Correct Explosive

Bringing down rock as cleanly and efficiently as shown in this photograph indicates a perfect primary blast, the result of careful planning from start to finish. But no matter how expert the engineering before the blast is fired, you won't get perfect results unless you use the explosive best suited to the characteristics of that particular rock strata.

In AMERICAN Explosives, products of intensive research, chemical control, thorough inspection and unremitting care in manufacture, you will find the blasting agent exactly fitted to your requirements.

• *Capable field engineers are available at your call.*

★ **HIGH EXPLOSIVES**
★ **PERMISSIBLES**
★ **BLASTING POWDER**
★ **BLASTING ACCESSORIES**

American Cyanamid & Chemical Corporation

A Unit of American Cyanamid Company

30 ROCKEFELLER PLAZA • NEW YORK, N. Y.

EXPLOSIVES DEPARTMENT

SALES OFFICES: Pittsburgh, Pa. Bluefield, West Va. Scranton, Pa. St. Louis, Mo. Chicago, Ill
Pottsville, Pa. Hazleton, Pa. Maynard, Mass.

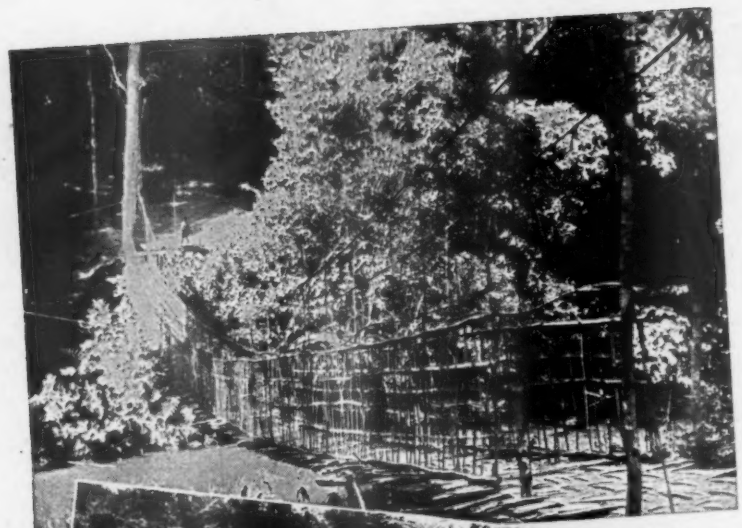
INDIAN TRAIL TO TOKYO

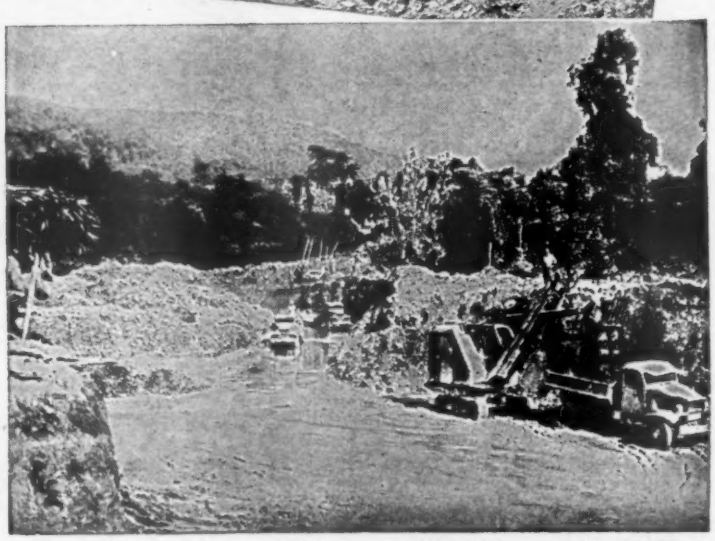
Rugged OSGOODS and Native Labor Help Army Engineers Blaze Vital Chinese Supply Line Through Burma

U.S. Army supply lines are inching their way across the dense jungles of northern Burma along a route known as the Ledo Road. The ultimate terminus for which our engineers are fighting and sweating, digging and building is . . . Tokyo.

Helping to clear the way and move the dirt along this virgin trail are husky, mobile OSGOOD Shovels. It's a tough job; as tough a test as you'll find for ingenious men and machines. That OSGOOD'S measure up—here as well as in battle areas all over the map—is a good thing to remember.

For someday your money, now invested in War Bonds will be buying new equipment, and when that day comes OSGOOD power, maneuverability and durability will be ready to deliver the proven performance you want!





U. S. Army Signal Corps and OWI Photos.

BUY ANOTHER WAR BOND!

Ledo Road to China—through tangled jungle, over innumerable rivers, streams and chasms, and blasted out of tree-covered hillsides—will in due time carry Allied supplies for the storming of Tokyo.

THE GENERAL EXCAVATOR COMPANY
CRANES, DRAGLINES AND SHOVELS
DIESEL, GAS, ELECTRIC

Associated with The General Excavator Company

OSGOOD — CRANES-SHOVELS — MARION OHIO U.S.A. — OSGOOD GENERAL

THE OSGOOD COMPANY • MARION, OHIO

OSGOOD
SHOVELS, DRAGLINES
CRANES
CRAWLER & WHEEL MOUNTS
DIESEL, OIL, GAS, ELECTRIC

"ALWAYS ON THE TARGET"

SINCE McLANAHAN 1835

IF you are shooting for higher production and profit records, *you can't miss* when you use McLANAHAN Equipment.

Modern industrial operations require machines that are consistent high scorers in reliability, capacity and economy . . . with time-proved performance standards that typify McLANAHAN Equipment.

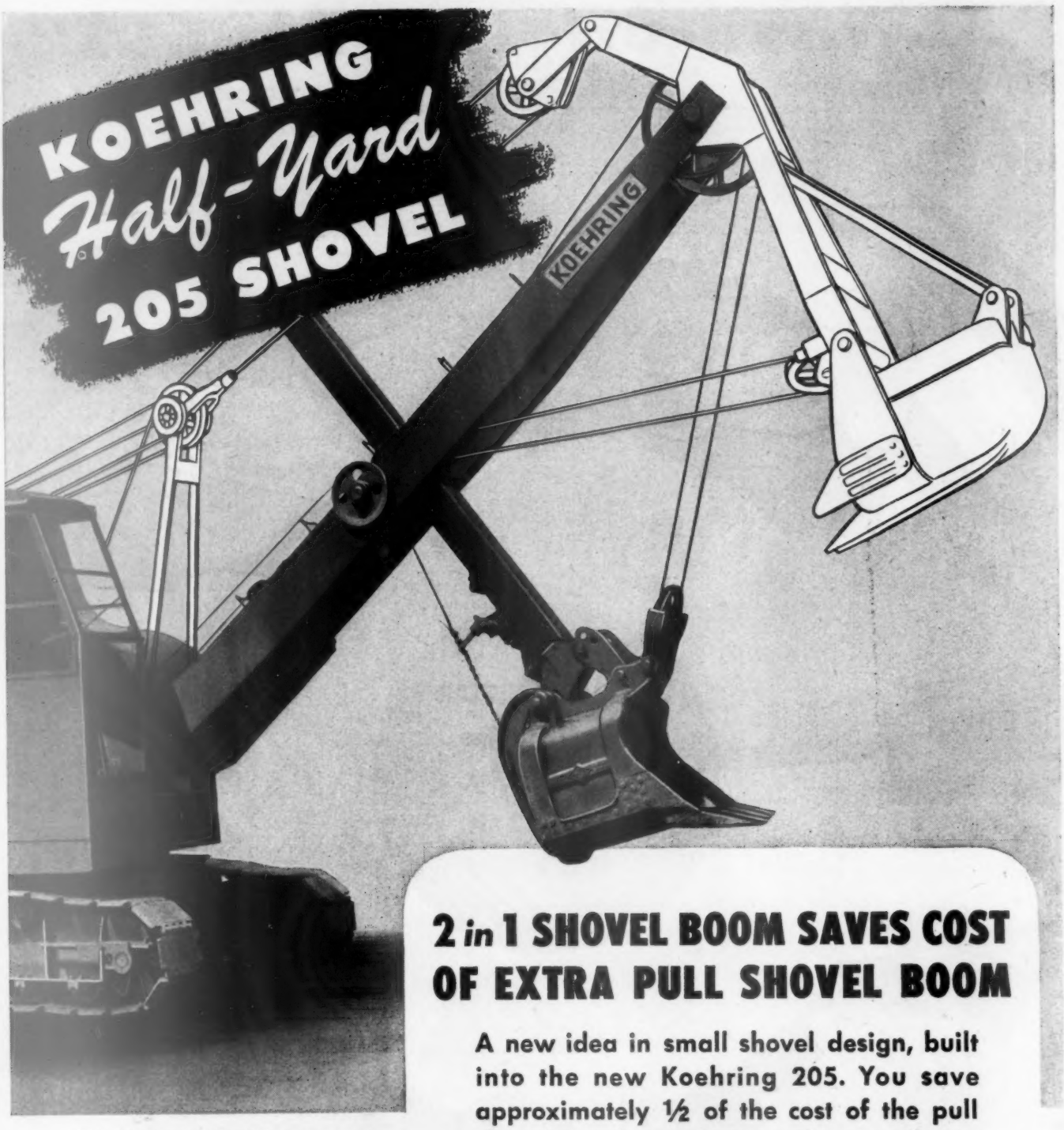
McLANAHAN Machines are in world-wide service

Write for details and prices

McLANAHAN & STONE CORP.

HOLLIDAYSBURG, PENNSYLVANIA

KOEHRING *Half-Yard* 205 SHOVEL



2 *in* 1 SHOVEL BOOM SAVES COST OF EXTRA PULL SHOVEL BOOM

A new idea in small shovel design, built into the new Koehring 205. You save approximately ½ of the cost of the pull shovel attachment because the same boom handles both dipper and pull shovel. You save in everyday operation because boom stays in place, cutting change-over time to the minimum. 100% welded and of box type construction, the 2-in-one boom works at top efficiency in either conversion.

With the new Koehring 205 you can travel, hoist, swing and raise or lower the boom... all at the same time. Contact your Koehring distributor today. Find out how the Koehring 205 fits into your post-war plans.

Orders Accepted NOW For Post-war Delivery..

KOEHRING COMPANY, *Milwaukee 10, Wis.*

KOEHRING HEAVY DUTY

ARMY E NAVY

HEAVY-DUTY CONSTRUCTION EQUIPMENT

SHOVELS AND CRANES
CRAWLER AND TRUCK MOUNTED

Engineers and contractors know that Uncle Sam is getting all of today's Hanson Production. They have to wait but they're looking ahead. They realize that tomorrow's working conditions will call for the most efficient equipment they can buy. Their experience with Hansons tells them that Hanson Shovels and Cranes will give them what they need to meet the toughest conditions. So the far-seeing ones are checking now on the possibility of Hanson deliveries.

If you don't know Hansons, it's a good time to find out about them. Get full information now. Then you'll be set for the big jobs ahead.

⅜ and ½ Cu. Yd. Capacity Shovels
4 and 6-Ton Capacity Cranes

Full Revolving—Low Center of Gravity—Rugged Welded Steel Construction—Flexible—Speedy—Safer

Convertible to

Shovel—Crane—Dragline—Pile Driver—Clamshell—Trench Hoe

THE HANSON CLUTCH AND MACHINERY CO.
TIFFIN, OHIO

We can all see with the naked eye that the Payroll Savings Plan provides the most stable method of war financing. Analyze it under the X-ray of sound economics and other important advantages are evident.

A continuous check on inflation, the Payroll Savings Plan helps American Industry to build the economic stability upon which future profits depend. Billions of dollars, invested in War Bonds through this greatest of all savings plans, represent a "high level" market for postwar products. Meanwhile, putting over Payroll Savings Plans *together* establishes a friendlier relationship between management and labor.

To working America the Payroll Savings Plan offers many new and desirable opportunities. Through this systematic "investment in victory," homes, education for their children and nest eggs for their old age are today within the reach of millions.

The benefits of the Payroll Savings Plan to both management and labor are national benefits. Instilling the thrift principle in the mind of the working men and women, the Payroll Savings Plan assures their future security—and is a definite contribution to the prosperity of postwar America!

The Treasury Department acknowledges with appreciation the publication of this message by

PIT and QUARRY

This is an official U.S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council.

"It's a Whirlwind" for Fine Sizing

STURTEVANT

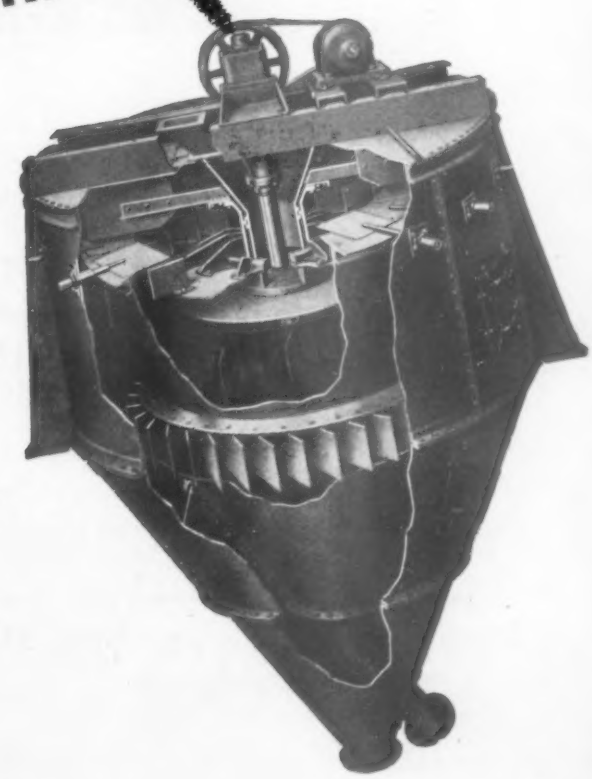
AIR SEPARATOR

The STURTEVANT slow-speed Whirlwind combines unique operating advantages, including lowered temperatures, positive particle size control, and high product uniformity in the range of 40 to 350 mesh.

This machine is especially valuable when used in closed circuit with pulverizer, where it increases output up to 300% and shows power savings of 10% to 50%.

Over 400 STURTEVANT Air Separators were installed on approval by the cement industry alone, without a single rejection.

Write for Bulletin



STURTEVANT MILL CO.

Harrison Square
Boston 22, Mass.

To all business, large or small...

Postwar business competition is going to be tough. Whether your trucks *make or lose money* for you is going to be more important than ever before.

Today in wartime, the lack of new civilian trucks has thrown a revealing light on the performance and stamina of every make of truck in the United States. Right now is the time to dig into all the facts as they exist—to find out which trucks are standing up best under the toughest conditions trucks have ever had to face.

Now is the time to determine which trucks will do YOUR job in the BEST possible way, at the LOWEST COST during the years ahead.

The phrase "Built like a Mack truck" got into the language because of something real that is *built* into Mack trucks.

Step by step—in materials, design and workmanship—they are deliberately built to work harder—last longer—require less repair than any other truck you can buy.

This is not a "claim," but a fact! It is backed by the records of thousands of wartime Mack owners who have seen Mack's better construction pay off at a time when it was needed most.

They will tell you—in no uncertain terms—that the man who owns a Mack is lucky, and the man who plans to get one is wise.

Essential civilian users can now secure Mack trucks. Ask your nearest Mack branch or dealer for details.

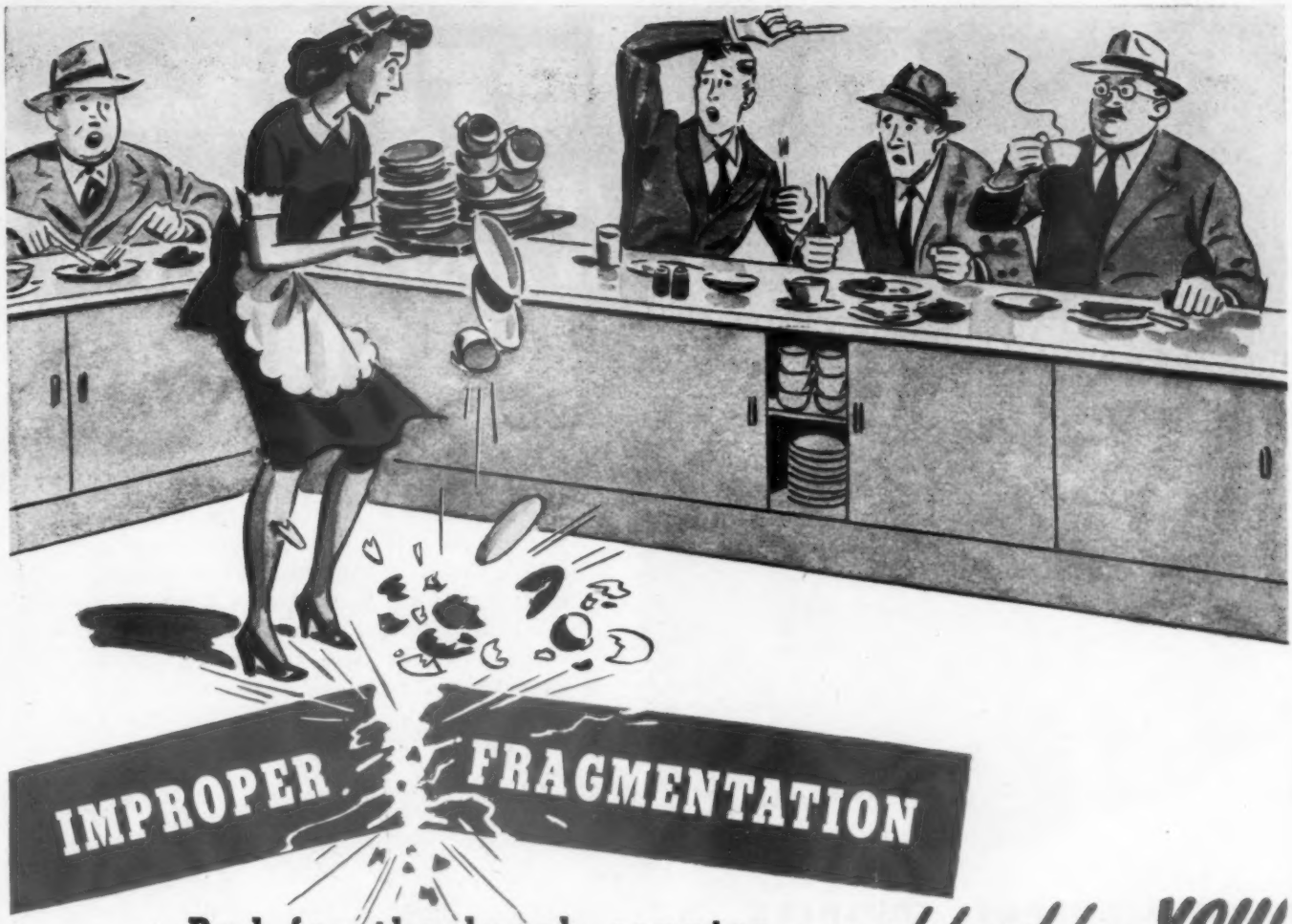
Mack

TRUCKS

ONE TON TO FORTY-FIVE TONS; BUSES
FIRE APPARATUS AND MARINE ENGINES

PERFORMANCE COUNTS

Buy That Extra War Bond Today



Bad for the lunch counter - *and bad for YOU!*

Crash-bang-clatter! The girl behind the counter has just dropped a stack of dishes. That's *improper fragmentation*—bad for the lunch counter and bad for the girl.

Improper fragmentation means costly waste in your business. It puts an extra burden on the shovel. It makes necessary excessive secondary blasting. It *decreases* your output and *increases* your costs.

That is why so many quarries are now using Detonite — the patented, surface-sensitized high explosive made only by The King Powder Co.

Detonite brings down the stone in the right sizes for your equipment to handle.

With the good breakage that Detonite gives you, shovels dig more tons with fewer breakdowns. More efficient shovel operation means greater tonnage per hour—less cost per ton. And with *proper* fragmentation, secondary blasting is greatly reduced.

Get in touch with your King representative, or write us direct. Remember—all we ask is a chance to demonstrate Detonite in *your* quarry—to *you.*

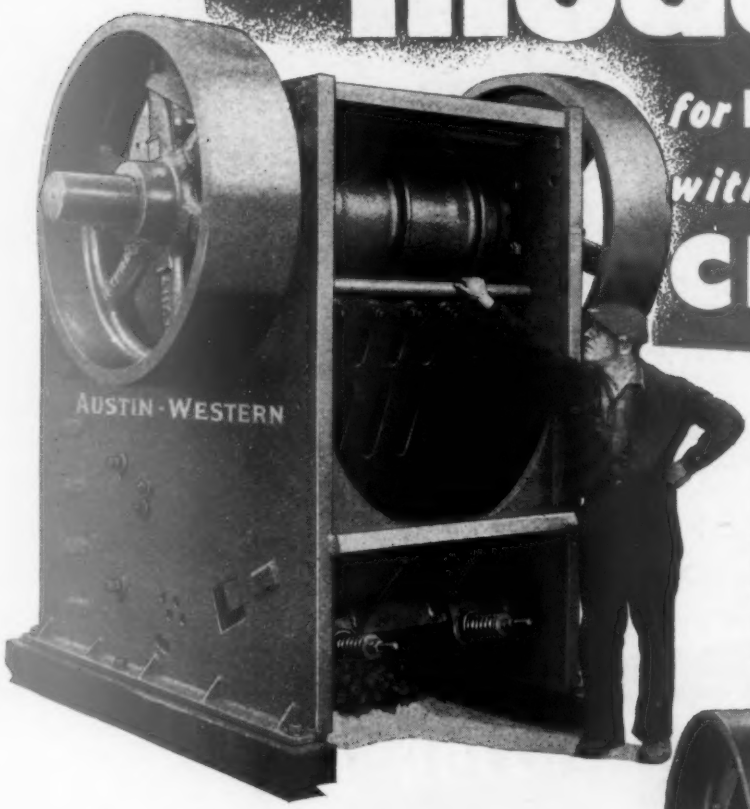
★ **BUY MORE BONDS TO BUY MORE BOMBERS . . . NOW!**

KING EXPLOSIVES

THE KING POWDER CO. INC.

CINCINNATI 1, OHIO . . . . . INCORPORATED 1878

modernize
for POST-WAR PROFITS with AUSTIN-WESTERN CRUSHERS

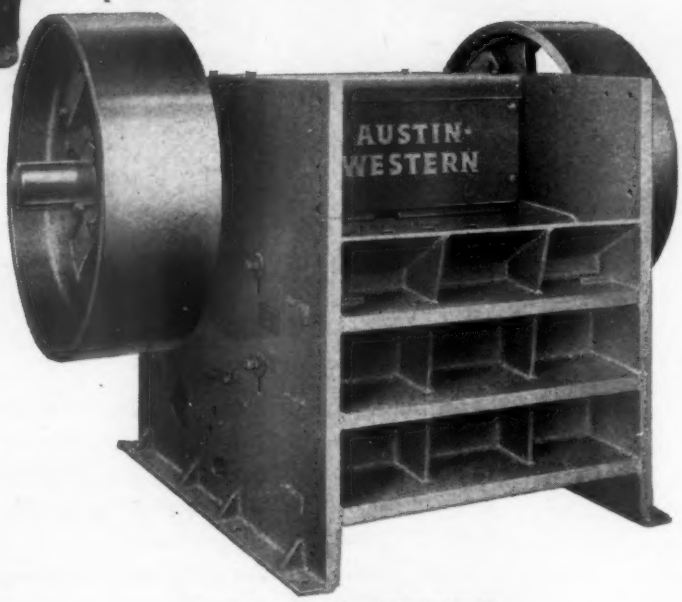


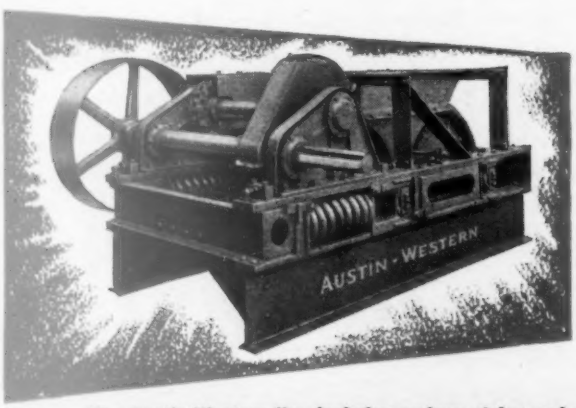
PRIMARY BREAKER

The 2540 Primary Breaker, illustrated at the left, with its welded steel plate main frame, oversize shaft and SKF self-aligning roller bearings, and extra deep jaws, is engineered throughout in the full realization that the crusher is the heart of any Plant . . . the one Unit that has to withstand the roughest treatment and that *controls your profit as well as the amount and kind of aggregate you produce.*

GENERAL PURPOSE CRUSHERS

These crushers range in jaw opening from 1020 to 2036, and can be used for either rock or gravel. Much more than is commonly realized, the capacity of any crusher depends upon its operating speed, jaw depth, crushing angle formed by the jaws, and length of stroke of the movable jaw. Austin-Western crushers are unexcelled in these vital respects.

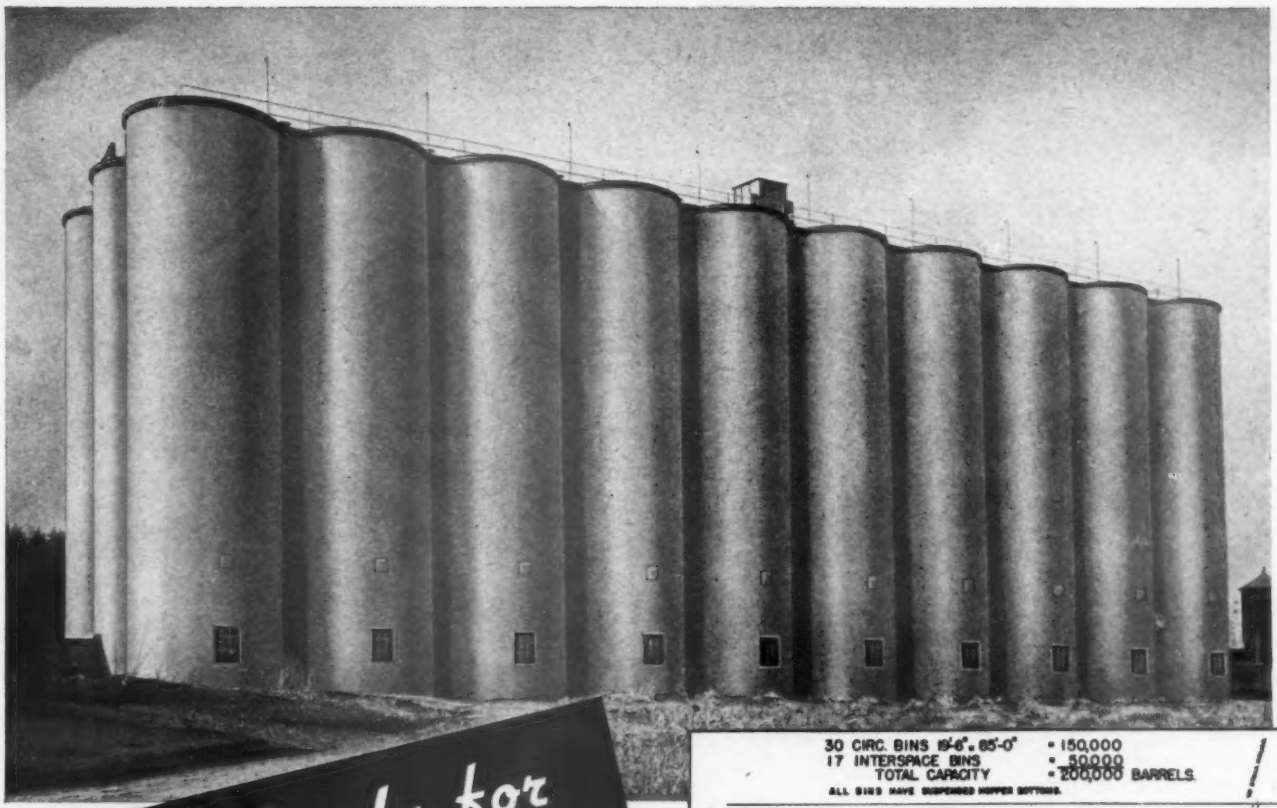




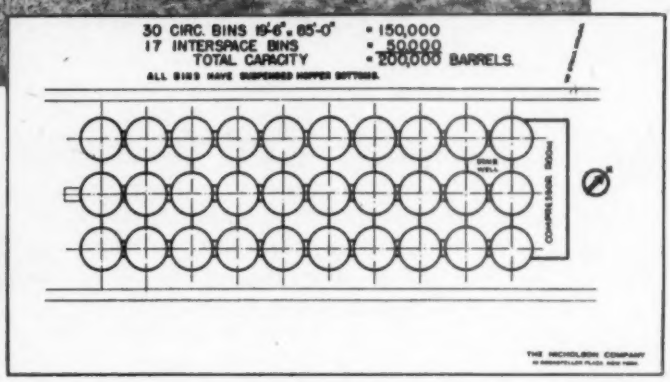
ROLL CRUSHERS

Austin-Western Roll Crushers have many unusual and worthwhile features of design, including: SKF roller bearings, located inside the rolls; manganese steel shells; roller chain drive for the rolls, and countershaft for direct motor drive.

The Austin-Western line includes various styles and sizes of elevators, conveyors, screens and bins; all of which can be combined with crushers to produce practically any desired size and style of stationary, semi-portable or portable Crushing and Screening Plant.



Get Ready for Post War Tonnages


30 CIRC. BINS 19'-6" x 85'-0" = 150,000
17 INTERSPACE BINS = 50,000
TOTAL CAPACITY = 200,000 BARRELS
ALL BINS HAVE SUSPENDED HOPPER BOTTOMS.
COMPRESSOR ROOM
THE NICHOLSON COMPANY

Build a **MODERN** and **SUITABLE** Storage Unit

Handling products into and out of storage can be a bottleneck . . . can be a rather costly item in the movement of cement, stone, gravel or sand from production to the contractor.

The thing to do NOW is to have Nicholson Engineers work with you on plans for meeting post-war construction demands which, according to all signs, will be the heaviest in history. And further, methods of construction have been speeded up as a result of war's experience, so there is every incentive to have storage handling facilities right up to the minute in every respect.

Nicholson Engineers have made a specialty of concrete storage bins and tanks since 1914. They have designed and constructed thousands of them. They have served every branch of the aggregate-producing and ready-mix concrete fields.

Why not contact us NOW for that post-war storage handling unit?

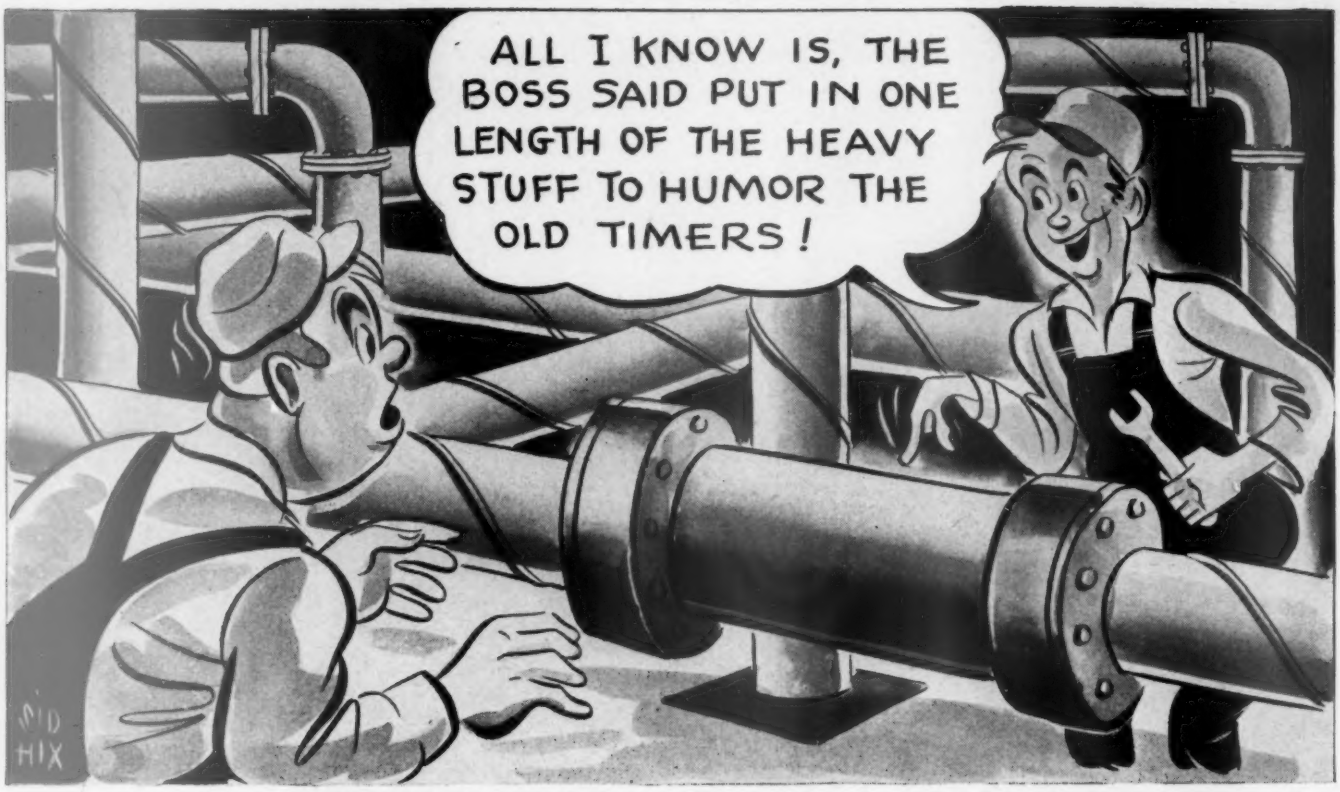
Send for a copy of our latest bulletin.

BULK STORAGE · COAL-GRAIN-LIQUID STORAGE · HANDLING EQUIPMENT

THE NICHOLSON CO.

CONSTRUCTION · CEMENT-OIL-CHEMICALS

Ten Rockefeller Plaza, New York 20, N. Y.



But it's a poor way to humor the man who pays the bill—

Certainly tradition, perhaps even sentiment, is still on the side of heavy pipe in some plants. But you'll find that good engineering and level-headed economy strongly favor Taylor Spiral Pipe for a big majority of everyday piping needs.

When we say heavy pipe we don't mean the "extra heavy" kind; we simply mean the traditional Standard Thickness kind that is so widely used for run-of-plant piping. Standard Thickness is heavy, too, in the sense that it is so often used for services where Taylor Spiral —a far lighter pipe—could do the job properly with strength and service life to spare.

The ability of Taylor Spiral Pipe to take the place of heavier pipe is a direct result of the spiral construction. The spiral seam—reinforcing it from end to end—makes it the strongest type of pipe of its weight. And the lighter weight of Taylor Spiral means lower first cost, lower shipping cost, lower cost of supporting structures, easier handling and erection—economies all along the line that in many cases cut its installed cost to half that of the heavier pipe it so well replaces.

Typical dollar saving uses of Taylor Spiral Pipe are listed below. Changing to this light-but-rugged pipe for such services is made easy by the complete range of sizes and wide variety of fittings. Thicknesses range from 18 to 6 gauge; sizes from 4″ to 42″; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and specials or fabricated assemblies are produced by Taylor Forge & Pipe Works, assuring complete service and undivided responsibility.

TAYLOR FORGE & PIPE WORKS

General Offices & Works: Chicago, P. O. Box 485 ★ New York Office: 50 Church St. ★ Philadelphia Office: Broad Street Station Bldg.

CHANGE TO TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines
- Low Pressure Steam and Air Lines
- Steam and Diesel Exhaust Lines
- Vacuum and Suction Lines
- Blower Piping
- Sand and Gravel Lines
- Industrial Gas Lines
- Oil and Gas Gathering Lines
- Swing Pipe
- Spray Pond Piping
- Hydraulic Mining
- Dredge Lines

This blasting agent makes quarry work SAFER

"Nitramon" is detonated by a combination of "Nitramon" Primer and Primacord.

With so many new hands on the job today, the safety features of "Nitramon" are more valuable than ever.

"Nitramon" is so totally different it's known as a blasting agent rather than an explosive. Unlike conventional explosives, "Nitramon" cannot be detonated by the strongest commercial blasting caps, Primacord, flame, friction, falling objects . . . or even the impact of high velocity rifle bullets!

"Nitramon" is designed to meet a variety of needs for quarry blasting using either well drill or coyote tunnel methods. Some types are suitable for breaking extremely hard rock . . . others are particularly adapted to easy-shooting material. "Nitramon" is readily loaded and produces no headaches. It is packed in water-tight metallic containers.

"Nitramon" is an economical blasting agent that makes quarry work safer . . . helps maintain schedules . . . and increases operating efficiency. Check with any Du Pont Explosives representative for complete information. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

DU PONT "NITRAMON"

The Safest Blasting Agent

DU PONT
REG. U.S. PAT. OFF.

ITS GREATER ENDURANCE MEANS BETTER VALUE . . . Preformed "HERCULES" (Red-Strand) Wire Rope is designed and manufactured to do today's more difficult jobs quicker . . . better . . . safer . . . more economically. Properly selected materials, plus advanced manufacturing methods, plus the specific advantages of the preforming process are the factors which add up to its better value.

What are some of the specific advantages of the preforming process? Actual service records show the following:

1

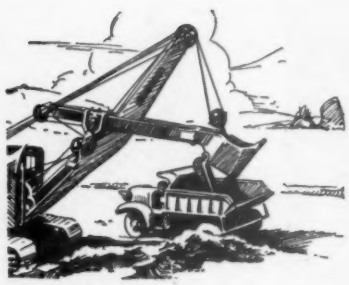
As broken wires lie practically flat, they are not so apt to injure the hands of men handling it. Also, there is less possibility of an "out of place" wire causing damage to adjacent wires in the rope.

2

It is not so easily kinked.

3

Its inert qualities make for smoother spooling and easier handling.



Important: **Preformed Wire is particularly efficient for use on:**

Backfillers—Bulldozers
Carryall Scrapers—Cranes
Draglines—Dredges
Dump Wagons—Hoists
Shovels—Skimmers
Trench Hoes

4

The preforming process minimizes the tendency of Lang Lay wire rope to loop or squirm.

5

There is less turning and twisting of the rope in the grooves, and less internal movement of the wires and strands—all of which tends to reduce both external and internal wear, thereby insuring longer service.

For consistent top-flight wire rope performance you can rely on "HERCULES". Let the Red-Strand be your guide. It is available in both Round Strand and Flattened Strand constructions in either the Preformed or Non-Preformed type. We shall be glad to help you select the right construction for your particular conditions.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS — ESTABLISHED 1857

5909 KENNERLY AVENUE — ST. LOUIS, MISSOURI, U. S. A.

NEW YORK . . . 90 West Street
CHICAGO . . 810 W. Washington Blvd.
DENVER . . . 1554 Wazee Street

SAN FRANCISCO . . 520 Fourth Street
PORTLAND . . 914 N. W. 14th Avenue
SEATTLE . . 3410 First Avenue South

JANUARY, 1945

The CONCRETE MANUFACTURER

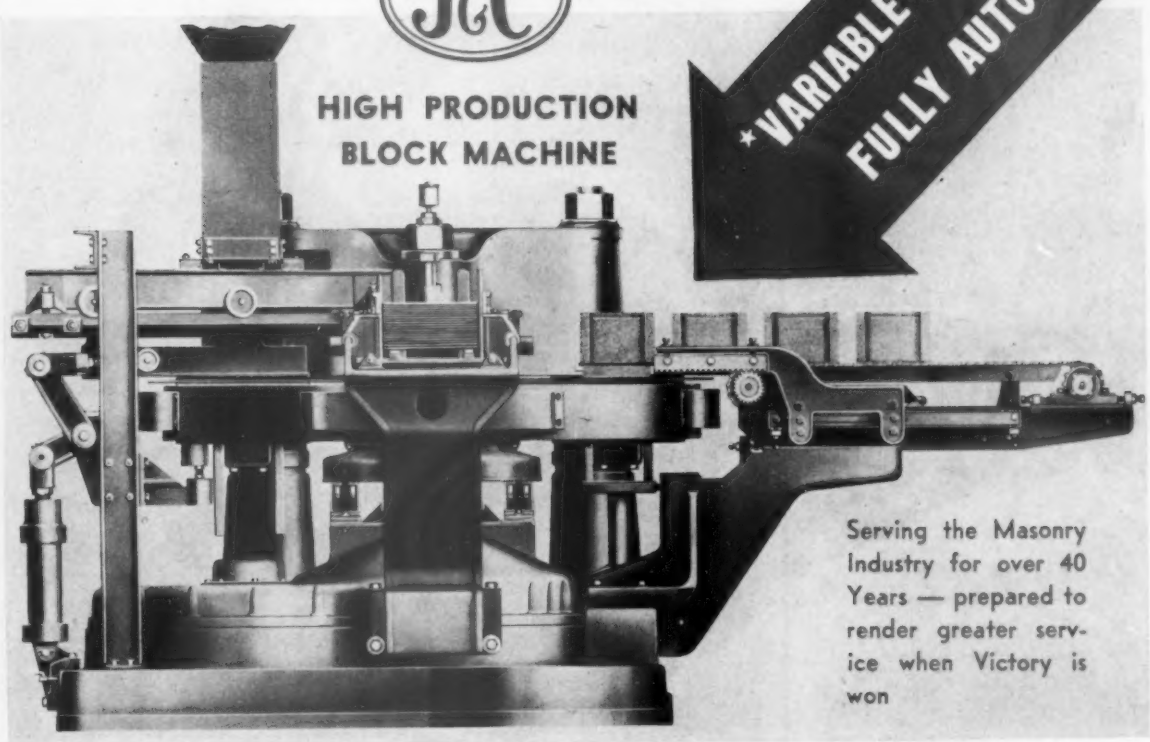
A Special Section of ...

WORTH WAITING FOR

J&C

HIGH PRODUCTION BLOCK MACHINE

*VARIABLE PRODUCTION FULLY AUTOMATIC



Serving the Masonry Industry for over 40 Years — prepared to render greater service when Victory is won

- Machine Tool Design and Construction
- Electrically Controlled
- Blocks Delivered from Machine Automatically
- Adjustable Mold Box
- Controlled Hydraulic Pressure
- As Modern as a B-29

* Production speed variable—up to 14 blocks per minute

JACKSON & CHURCH CO. **SAGINAW, MICHIGAN**

JANUARY, 1945

The CONCRETE MANUFACTURER

JANUARY, 1945

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION OF CONCRETE PRODUCTS AND READY - MIXED CONCRETE

Published by Pit and Quarry Publications
538 South Clark St. Chicago 5

H. W. BAUMGARTNER
President

STANLEY A. PHILLIPS
Vice-President and Directing Editor

W. E. TRAUFFER
Editor

HARRY F. UTLEY
Senior Field Engineering Editor

WILLIAM M. AVERY
Field Engineering Editor

SPENCER JONES
Eastern Field Engineering Editor

BARRY JAMES
Associate Editor

W. T. KLUSSMAN
Secretary

RAY L. SMITH, JR.
Circulation Manager

General Manager, Field Contracts:
JAMES E. MONTGOMERY
538 South Clark Street
Chicago 5, Ill.

Eastern Manager, Field Contracts:
W. A. WILSON
Assistant
CHARLES H. BUSSMANN
Room 1235, 101 Park Ave.
New York 17, N. Y.

Central Manager, Field Contracts:
D. R. EGBERT
859 Leader Bldg.
Cleveland 14, O.

Western Manager, Field Contracts:
E. C. KAYE
Chicago 5, Ill.

Field Manager, Pit and Quarry Handbook:
P. K. JOHNSON
Chicago 5, Ill.

Pacific Coast Representative:
HARRY F. UTLEY
111 South Redman Ave.
Whittier, Cal.

N. C. M. A. Cancels Annual Convention

In compliance with a request from the Office of Defense Transportation, the National Concrete Masonry Association has announced the cancellation of its annual convention scheduled to be held in Chicago February 7 to 9. Letters to this effect have been sent out to the members of the association.

Los Angeles Units Makers Granted Price Increase

Concrete-products manufacturers in the Los Angeles area have just been granted price relief by an increase in ceiling prices and allowance for delivery of the units in Order G-6 under M.P.R. 188 issued December 4, 1944, by the San Francisco regional office of the Office of Price Administration.

Under the new schedule units are given a ceiling price f.o.b. plant with a delivery charge based upon the distance the units are transported. For example, units with nominal dimensions of 4 by 8 by 12 inches, probably the most popular in the area, formerly were sold and delivered for $55 per thousand, the O.P.A. ceiling. Under the new order such units carry a ceiling price of $59 per thousand at the plant, plus $6.50 for delivery within 12 miles, or plus $12 for delivery within 12 to 20 miles. Other sizes are priced in proportion.

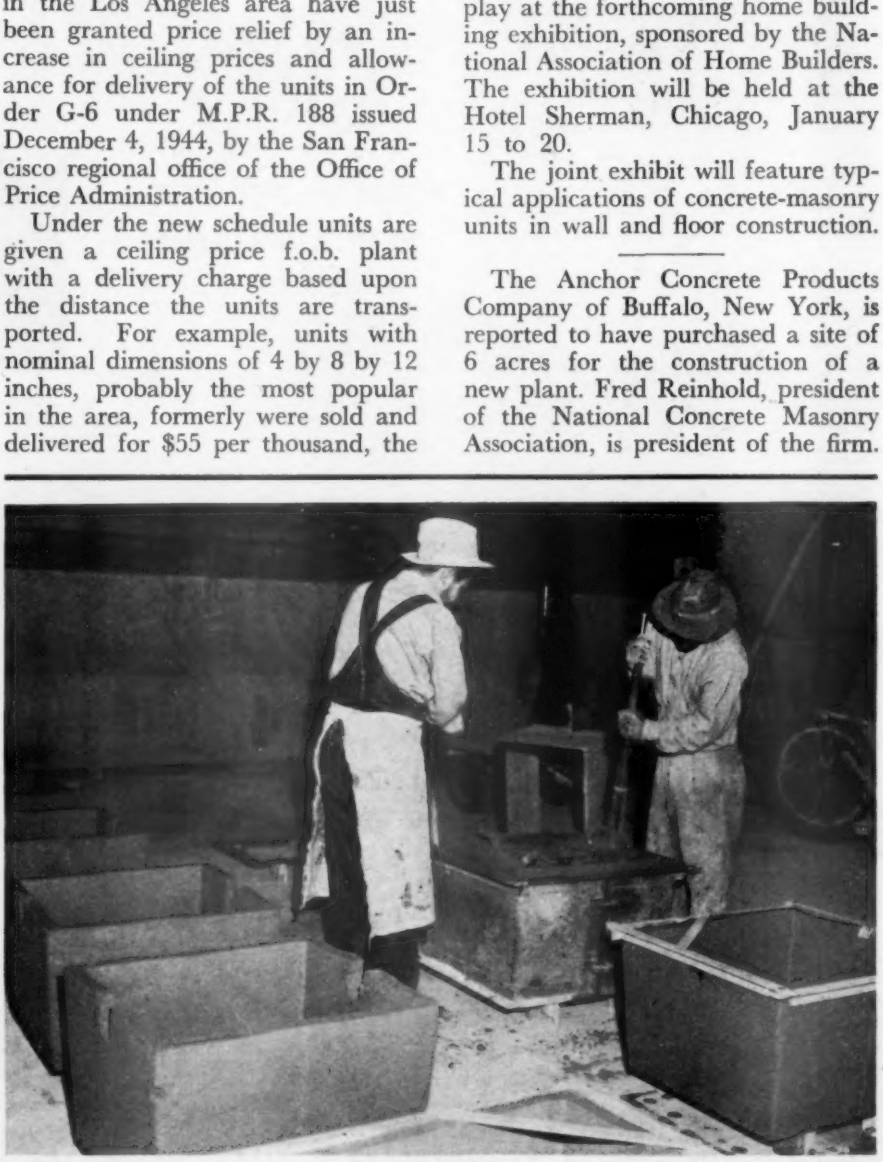
The order, issued December 4, is retroactive to November 30, 1944.

N.C.M.A. Plans Display At Home Bldg. Exhibition

The National Concrete Masonry Association and the Portland Cement Association are planning a joint display at the forthcoming home building exhibition, sponsored by the National Association of Home Builders. The exhibition will be held at the Hotel Sherman, Chicago, January 15 to 20.

The joint exhibit will feature typical applications of concrete-masonry units in wall and floor construction.

The Anchor Concrete Products Company of Buffalo, New York, is reported to have purchased a site of 6 acres for the construction of a new plant. Fred Reinhold, president of the National Concrete Masonry Association, is president of the firm.



Plain concrete boxes for housing gas and water meters were among the many war-born concrete products noted during the past year. The above view shows workmen tamping the units which are made at the Austin Concrete Works, Austin, Texas.

Contractor Operates Portable, Then Permanent Concrete Batching Plants

Separate Skips Used for Aggregates Received in Railroad Cars and Trucks

another ON THE SPOT report

ONE of the reasons why the ready-mixed concrete industry is growing by leaps and bounds, even during this period of equipment shortages, is that many contractors, aggregate producers, etc., who went into this business with portable or temporary setups to supply the concrete for vital war-construction projects are using this equipment in the establishment of permanent plants in centers where an adequate post-war demand is expected. An example is the firm of I. C. Garber & Son of Jackson, Mississippi, which had been specializing on general concrete construction for many years. Beginning early in 1940 this company operated several batching plants and a fleet of 18 truck mixers on various projects all over the South. Late in 1940 a small permanent batching plant was built in Jackson to serve local war projects and other local demands. This plant has been retained to supply the demand for private building construction which is light at present but is expected to be important after the war. Jackson is a rapidly-growing industrial city which jumped from a population of 48,282 in 1930 to 62,107 in 1940 and is estimated at 87,000 now.

The first war contract supplied from a temporary plant was at Camp Shelby, Mississippi, for which 47,000 cubic yards of concrete was supplied in 1940. Supplemental orders for 30,000 and 20,000 cubic yards kept this plant busy until March, 1942. It was then moved to Eldorado, Arkansas, where, between June and December of 1942, it supplied 80,000 cubic yards for the Ozark Ordnance Works.

In 1942 another plant supplied 7,500 cubic yards of concrete for a war prisoners' camp at Monticello, Arkansas, and 2,500 cubic yards for the Clinton Internment Camp (Japanese) at McRaven, Mississippi. Other similar jobs were also supplied, including several Navy projects near Gulfport, Mississippi.

A subsidiary, the Dixie Concrete Company, operated 2 plants at Charleston, South Carolina, to supply 150,000 cubic yards of concrete to Navy projects, including an embarkation depot, air bases, hospitals, and housing projects for war workers and naval personnel. Both these plants were later sold. As the Gulf

(*Continued on page* 193)

The plant with the railroad and truck skiphoists on either side of bins. An open-top truck mixer is shown being loaded.

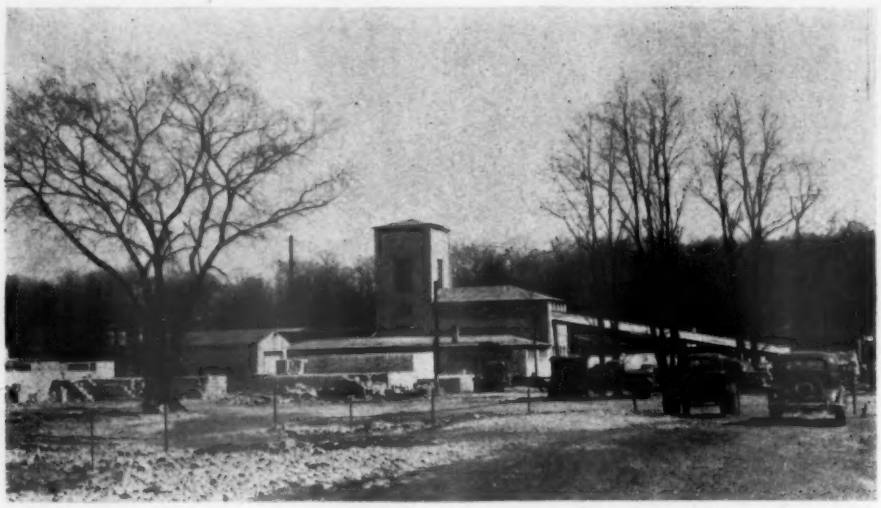
• Left: The company's modern office building with plant in background.

Right: I. C. Garber, Jr., president; D. S. Brooks, secretary and treasurer; Charles Schelb, superintendent.

The CONCRETE MANUFACTURER

Use of Concrete Products Continues To Gain Over Other Building Materials

Growing Farm Demand Bolsters 1944 Production; Ready-Mixed Operations Drop but Show Gain Relative to Total Concrete Used in Year



• Among the relatively few new plants constructed during the year was the Knox Concrete Products Company's modern plant at Knoxville, Tennessee. The long inclined conveyor at right carries sacked cement.

DESPITE the continued sharp drop in building construction throughout 1944, there were indications that the production of concrete blocks for the year might show no more than a 10 or 15 per cent. drop from the 1943 figure of approximately 300,000,000 8- by 8- by 16-inch equivalents. Data obtained in a survey by the War Production Board showed that the use of concrete blocks and other concrete-masonry products had increased in relation to the use of other construction materials, and the block industry, anticipating the post-war building boom, found much satisfaction in this comparison.

One of the most significant and important developments of the year was the continued rapid growth of the farm market, which helped so materially to maintain demand after the sharp decline in construction activity in 1943. The Portland Cement Association which has long recognized the potentialities of the farm market, recently appointed William G. Kaiser, head of the Cement Products Bureau for the past 15 years, as manager of a newly-created Farm Bureau.

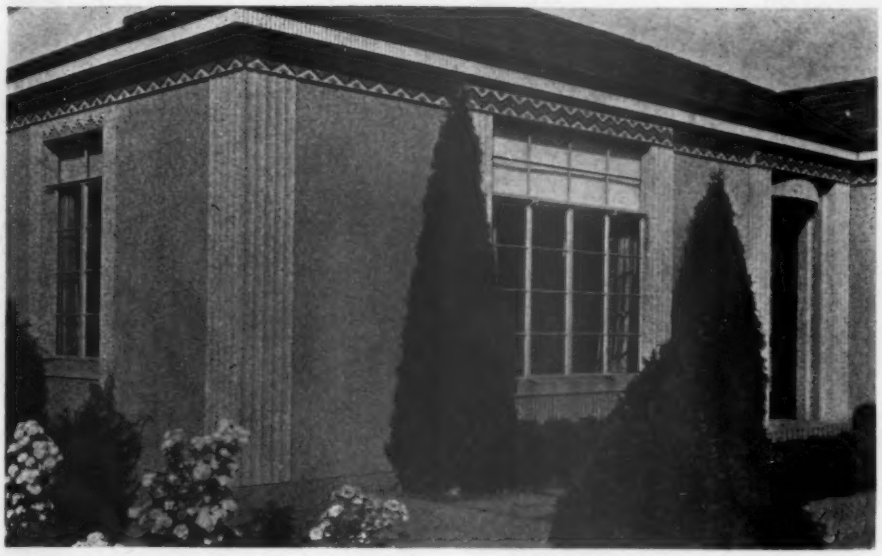
Block producers in some sections report that it is impossible for their plants to keep up with the farm demand, and many concerns are booking orders 30 and 60 days ahead.

So clamorous is the demand in some areas that a few producers are yielding to the pressure by shipping their blocks almost immediately after they are removed from the curing rooms. Sober observers see in this practice a grave threat to the fine reputation which the industry in general has built for itself, for it was precisely such hit-or-miss, slap-dash methods that many years ago retarded the wide acceptance of concrete masonry as a building material of front-rank importance. It is undoubtedly true that the majority of producers are maintaining high standards of production despite the demand for deliveries, but it is equally true that the industry as a whole will suffer far more from occasionally lowered production standards than will the few individual producers who are guilty of such violations.

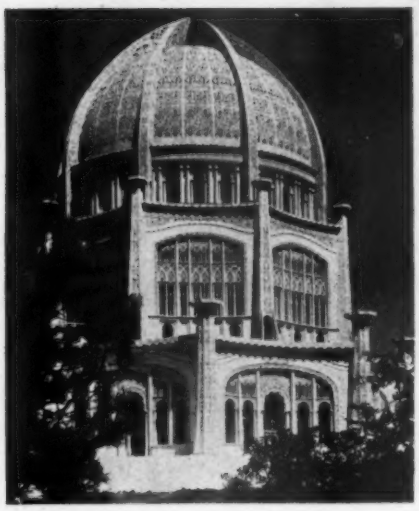
While the construction of new plants during 1944 remained at a virtual standstill, equipment deliveries showed a noticeable improvement over 1943, and many plants were successful in carrying out improvement programs. Labor shortages are general throughout the industry, and many plants have been compelled to eliminate hand methods wherever possible in order to continue operating at all. There is every indication that after the war the mechanization of the block industry will go forward at a pace undreamed-of a few years ago, for the war years have sharply outlined the limitations of plants requiring excessive hand labor.

Technological developments in the industry during 1944 were necessarily relegated to the background. Patents have been applied for covering a novel "merry-go-round" curing kiln designed by Robert M.

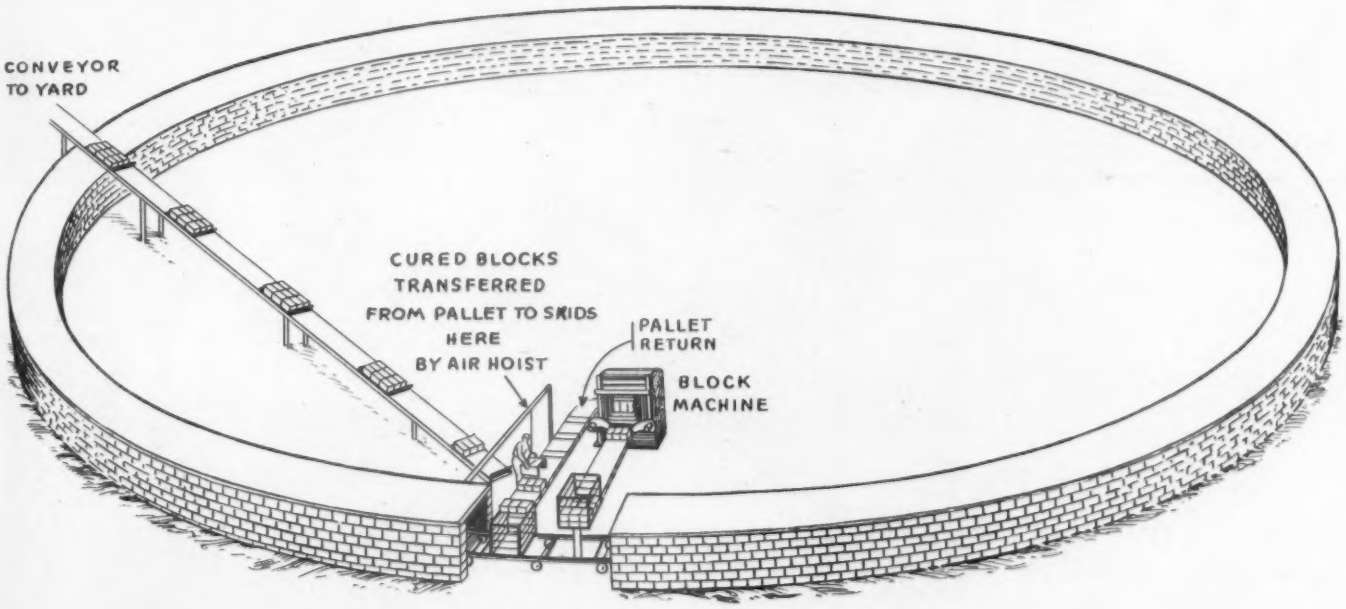
• An interesting application of Flexicore concrete slabs in wall construction. This view shows the house completed except for the placing of sills and corner trim.



• Residence showing exposed aggregate panels, door and window frames and trim.



• Bahai Temple on the shores of Lake Michigan, at Wilmette, Illinois.



• Above: An artist's simplified sketch of the "merry-go-round" curing kiln developed by Robert H. Gray of Sheffield, Alabama.

• Left: Bigger and better concrete "products" were produced during 1944 as evidenced by the view of one of the completed concrete ships built at Hooker's Point, Tampa, Florida, on its trial run. The 350-foot vessel has a displacement of 11,450 long tons, and requires 3,100 cubic yards of concrete and 1,350 tons of reinforcing steel in addition to the 50-ton steel bow plate.

• Top left: The almost unlimited range of effects obtainable with concrete is demonstrated by this residence in Silver Springs, Maryland. The exposed aggregate panels, door and window frames and trim were produced at Earley Studio, Rosslyn, Virginia.

• The striking beauty obtainable with concrete is dramatically demonstrated in the recently completed Bahai Temple in Wilmette, Illinois, above right. The pre-cast slabs and intricate filigree panels were made at Earley Studio, Rosslyn, Virginia.

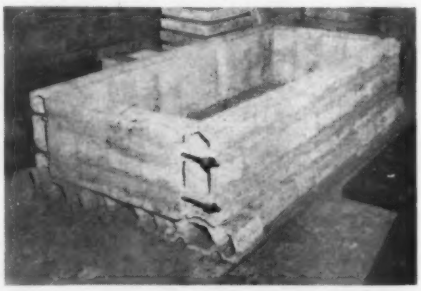
Gray, head of the Gray Concrete Products Company of Sheffield, Alabama. The kiln, which was to have been fabricated in Birmingham last summer, consists of concentric concrete-block walls and monolithic-concrete floor and roof. The rack-loads of blocks, moving on two fixed circles of steel revolving slowly on roller-bearing wheels, will require about 20 hours to travel completely around the 150 foot-diameter circle. The labor-saving potentialities of the machine are self-evident, and there will be wide interest in cost and operating data when these become available.

Ben Wilk, head of the Standard Building Products Company of Detroit, disclosed recently that his company has had considerable success with the use of unit gas heaters in place of steam for heating the eight curing rooms in its concrete-block plant. Each room is equipped with a heater and a fan which blows the heat through the room and also disperses the moisture which is supplied by a water-spray nozzle located just ahead of the burner. While the cost of heating in this manner compares favorably with that of steam, the system has obvious advantages in its complete flexibility and low first cost.

The use of high-pressure-steam curing received a resounding endorsement in a progress report by Committee 716 of the American Concrete Institute. The report stated that the compressive strength of high-pressure-steam-cured blocks

• A retaining wall built of concrete cribbing units produced in the New Martinsville, West Virginia, plant of the Universal Concrete Pipe Co.

at one day is at least equal to that of moisture-cured units at 28 days, and that the high early strength obtained with pressure curing is permanent. Other advantages of curing under pressure cited by the report are the absence of substantial changes in shape or size, 50 per cent. less shrinkage than occurs in moist-cured units, increased resistance to sulphate action and the virtual elimination of leaching and efflorescence.



• The experimental milk-cooling tank pictured above was made up from special concrete units produced by the Cities Fuel and Supply Co. of Milwaukee.

The use of air-entraining cements in block production continued to spread during the past year, but the entire subject remained somewhat controversial, with enthusiastic partisans manning both sides of the barricades. There appeared still to be almost as many theories on the subject as there are theorizers, and many producers have adopted a quite-understandable "wait-and-see" attitude.

Modular planning, as it effects concrete masonry, inched forward a few steps with the adoption of new

STRAYER PORTABLE CONCRETE PLANTS

20 to 40 YARDS PER HR.

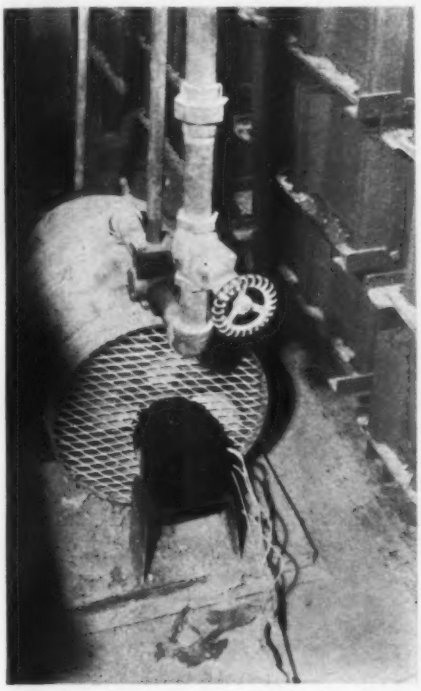
Make 20 to 40 yards of specification concrete per hour on the job. One-man operation and a helper to handle cement bags. One hour to set up. Move from job to job. Write for booklet today.

ERIE THE COMPLETE LINE BUCKETS

Hundreds of Erie Buckets are shipped monthly for war uses. Straight line bucket production experience means better buckets for post-war and fast delivery. Investigate the complete Erie line now.

ERIE STEEL CONSTRUCTION CO.
ERIE, PENNSYLVANIA
Aggre Meters • Buckets • Concrete Plants • Traveling Cranes

standards by the National Concrete Masonry Association. Having determined that a 3/8-inch mortar-joint allowance is best suited to masonry construction, the association



• View of the gas burner, fan and sprays which are being used to heat and humidify curing rooms in the block plant of the Standard Building Products Co., Detroit.

has fixed standard-face net dimensions of blocks at 7⅝ by 15⅝ inches, with net thicknesses of 3⅝, 7⅝, 9⅝, and 11⅝ inches. These dimensions conform with the recommendations of the American

• International boundary posts cast at Earley Studio.

Standards Association on modular planning, and it is reported that the clay-products industry is prepared to supply its units on the same basis. The expense to producers involved

HANDLING+Processing+HANDLING+Assembling+HANDLING+Packing+HANDLING+Storage+HANDLING
HANDLING—the Common Denominator of PRODUCTION

LET MEN DIRECT POWER—NOT GENERATE IT!

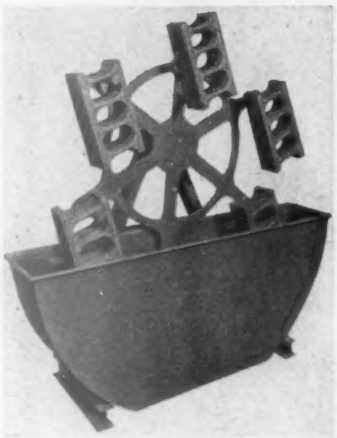
Handling Materials—most common of all production operations—is the key to better plant, dock and terminal performance. Handling starts with the raw materials, follows on through all phases of production and distribution, never stopping until the finished product is delivered to final destination.

Versatile Towmotor—*the one-man-gang*—provides you with a handling system that assures full benefits from other new and modern machinery. Towmotor capably performs hundreds of important handling operations. Save time, manpower, money—*write today* for the Towmotor DATA FILE . . . it gives you the complete story.

TOWMOTOR
THE ONE-MAN-GANG

TOWMOTOR CORPORATION • 1228 E. 152ND STREET, CLEVELAND 10, OHIO

PALLET OILER AND CLEANER



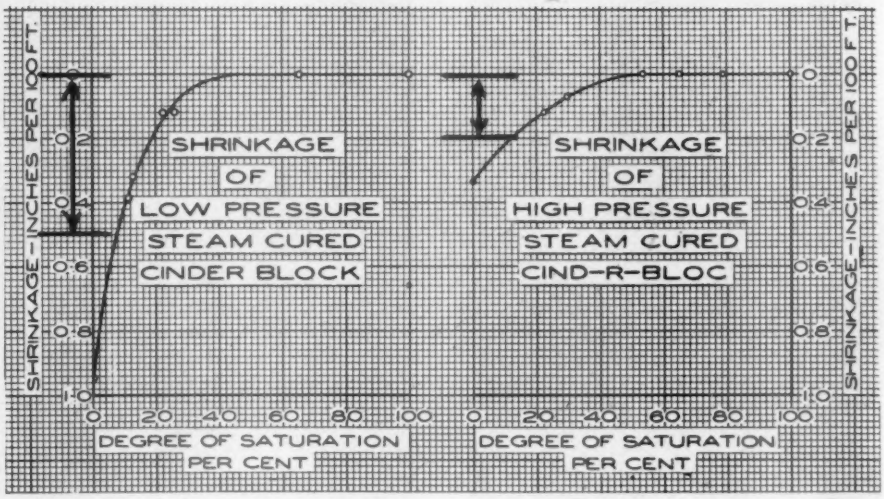
Not only keeps pallets clean and oiled, but also when placed adjacent to block machine serves as a handy feeding station.

Write for Circular

THE KENT MACHINE CO.
CUYAHOGA FALLS, OHIO

in making the required changes in mold boxes would be at least partially offset by a reduction of one to two pounds in the present weight of standard-size blocks.

Production of concrete pipe during 1944 was at a low level in most sections of the country, although some activity continued in a few of the larger defense areas. Pacific Coast producers were generally better off than most others due to an increased demand for pipe in farm irrigation work, but man-power shortages held the volume down to a fraction of the potential market. Many plants shifted to the production of other types of concrete products in order to keep their crews employed.



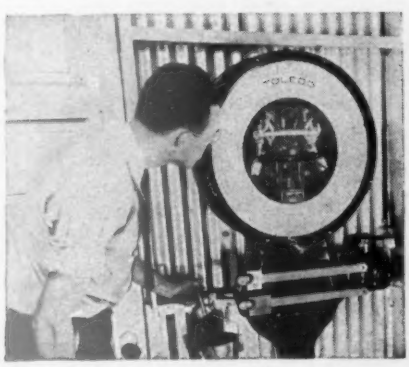
• Chart showing relative shrinkage of ordinary and high-pressure-steam-cured units. Arrows indicate maximum shrinkage under normal conditions.

In the miscellaneous products field there was still a brisk demand for such items as manhole frames and covers, revetment blocks, inlet covers, bath tubs, shower-stall bases, coal boxes, septic tanks, laundry tubs, lawn rollers, sash weights, feeding and watering troughs and ballast blocks. Producers continued

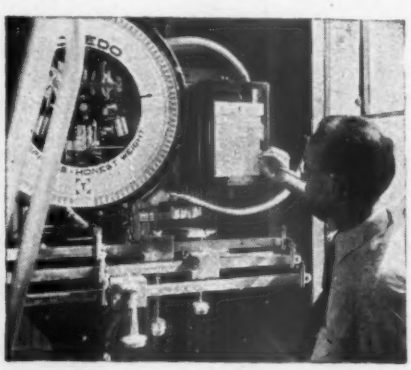
UNIFORMITY IN READY-MIXED CONCRETE

No more too-wet or too-dry batches. No more erratic cylinder tests. No more wasted truck time by water corrections on the job. No more worry about yield control. End these inefficiencies by installing—

[SC]² PRECISION CONCRETE CONTROL in your plant.



The [SC]² Moisture Meter. The only unit capable of determining moisture content in less than 1 minute.

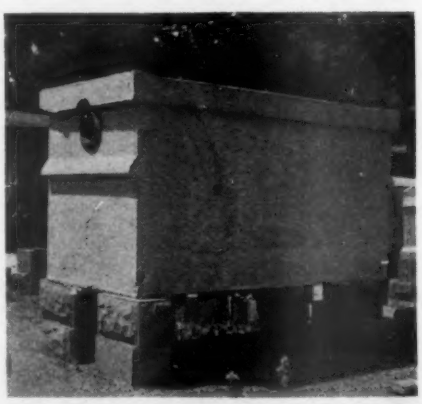


The [SC]² Compensator which compensates for the moisture content in every ingredient and graphically records its every operation.

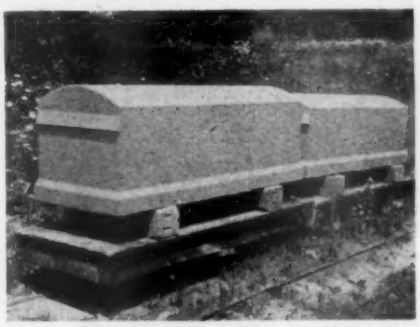
[SC]² **CONTROL** produces remarkable batch-to-batch and day-to-day uniformity—in quality, slump and yield—and, by doing a better batching job, has always increased profits.

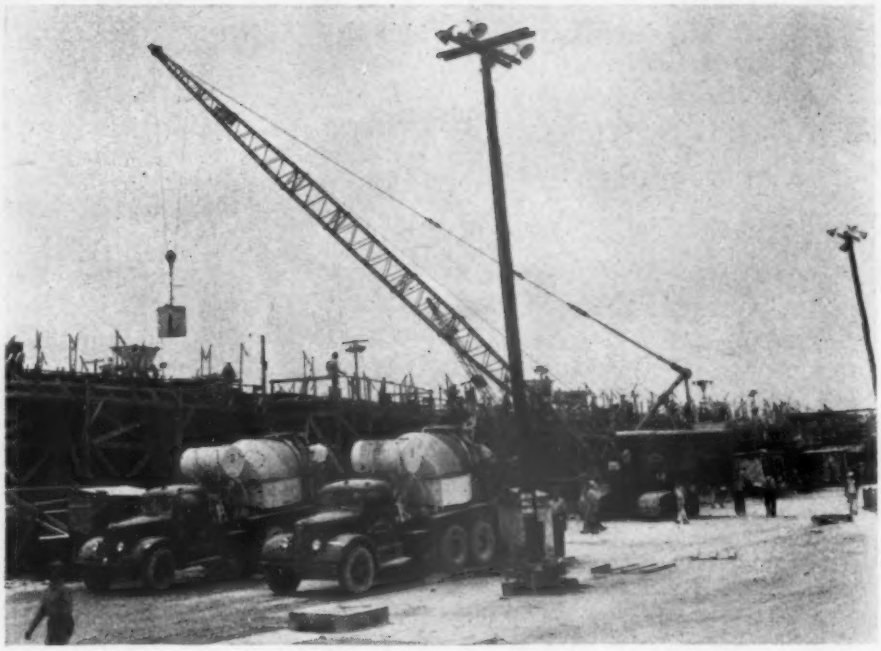
[SC]² **CONTROL** has pleased and satisfied every engineer, contractor and ready-mix-plant owner who has used it. It can do as much for you. You cannot afford not to investigate this. Write now for our new bulletin on batching plant performance and get full information on what [SC]² **CONTROL** can accomplish in your plant.

SCIENTIFIC CONCRETE SERVICE CORPORATION
McLachlen Building · **Washington, D. C.**



• The heavy demand for such concrete products as burial vaults and septic tanks continued unabated throughout 1944. The units pictured were produced by B. C. Crandall and Son, Benton Harbor, Michigan.





• A view in the McCloskey and Company shipyard at Hooker's Point, Tampa, Florida, showing crane handling concrete buckets from the 2 truck-mixers in the foreground.

to show remarkable ingenuity and inventiveness in developing vibrating techniques and curing methods to suit the requirements of such products.

Available estimates indicate that approximately 11,000,000 cubic yards of ready-mixed concrete was produced during 1944, a drop of about 25 per cent. below 1943 production. At the National Ready-Mixed Concrete Association's convention in New York last year it was disclosed that reporting members, who produced 11,186,455 cubic yards of concrete in 1942, turned out only 7,283,943 cubic yards in 1943.

One of the more controversial question in the ready-mixed concrete industry to-day is the use of dump trucks for the delivery of central-mixed vinsol-resin concrete. This practice, according to a few ardent exponents, is the final stage of a cycle which began years ago with the discarding of dump trucks for hauling because of segregation. The air-entraining cements produce a concrete that is highly resistant to segregation, and seem, therefore, to solve this most-serious objection to the use of dump trucks.

A few operators are now employing dump trucks for deliveries, but there are still insufficient data and experience on the practice to justify even the most general conclusions. The cost-saving potentialities of the method are self-evident, but the industry generally is waiting for more conclusive evidence than is now available that there are no serious qualitative losses involved.

The specter of contract renegotiation, which had haunted ready-mixed-concrete producers since the act was passed, was disposed of during 1944, when the War Contracts Adjustment Board granted exemption to the industry.

Garber (*from page 187*)

Concrete Company another plant supplied 10,000 cubic yards for a war project at Brunswick, Georgia.

In the meantime the Jackson plant was also busy supplying similar demands, including 15,000 cubic yards to the Jackson Air Base, 12,000 cubic yards for parking aprons, and 20,000 cubic yards to various other projects.

This plant has an unusual method of elevating aggregates to the 125-cubic yard bins. There are two skip hoists, one on each side of the plant, one receiving material from trucks and the other from hopper-bottom cars. A batcher weighs the aggregates into truck mixers and the cement is added from sacks.

The truck mixer fleet originally consisted of 5 Jaeger standard mixers. Then 6 Jaeger high-dump mixers and later 7 Concrete Transport mixers were added. These are 2- and 2¾-cubic yard machines mounted on Ford truck chassis. During the temporary lull in demand some of these mixers have been rented to producers in other areas. Others have been sold.

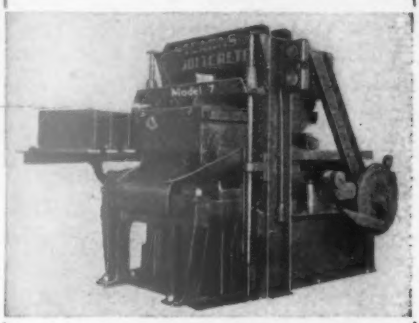
The Right Combination
"Pulsating Magnet" ELECTRIC VIBRATORS
on those troublesome, "Constipated" bins and hoppers to keep their contents agitated and free-flowing.
"Vibra-Flow" VIBRATORY FEEDERS
under those bins and hoppers to regulate their discharge by rheostat control of rate of flow.
by SYNTRON
REG. TRADE MARK

Literature on Request

SYNTRON CO., 385 Carson St., Homer City, Pa.

The CONCRETE MANUFACTURER

The Vibration Machine Supreme



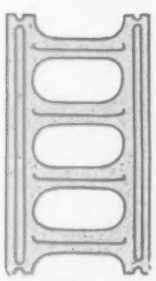
Vibration under pressure — 7,200 blows per minute—and ruggedly built to give long life, the Joltcrete machine is the choice of the wise concrete-products operator. Produces clean-cut, high strength units in any size, and gets the most out of a bag of cement. Built in three sizes with capacities of 7 to 9 standard units per minute.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers and Joltcrete, Stearns mixers and Cast Iron and Press Steel pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal, Stearns, Blystone mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager Columbus, Ohio

Fast — Easy — Profitable

With THIS



COMMERCIAL Cored Steel Pallet

The Perfect Pallet for Vibrators or Tampers

Make THIS

COMMERCIAL Cored Steel Pallets are easily handled, do not warp, break or crack, and insure perfectly cured and shaped block.

Maximum product range and minimum machine expense are assured.

Write for Information

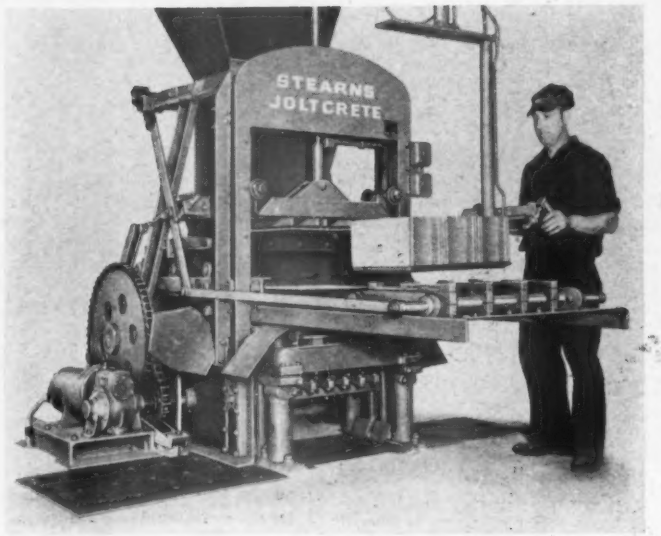
THE COMMERCIAL SHEARING AND STAMPING CO.
Youngstown, Ohio

NEW MACHINERY and SUPPLIES

● Plate-Type Off-Bearer

The photograph below shows the Stearns #9 Joltcrete block machine equipped with the recently developed plate-type power off-bearer and the automatic power carriage drive. After blocks are stripped from the mold box, they are delivered without manual operation to the front of the machine by the power carriage drive.

The air-operated off-bearer is also supplied in a basket-type model which, like the plate type, may be used with either the #9 or the #7 Joltcrete machine.



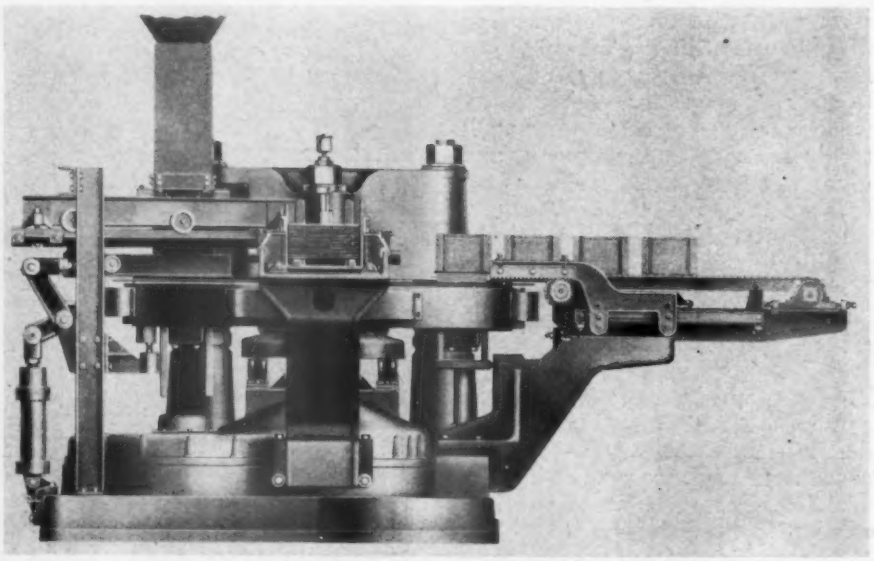
The plate-type power off-bearer.

● New Block Machine

The Jackson & Church Company has announced the development of a fully automatic block machine employing both mechanical vibration and positive hydraulic pressure. According to the manufacturer, the operation of the machine is both continuous and automatic and is completely timed and controlled electrically.

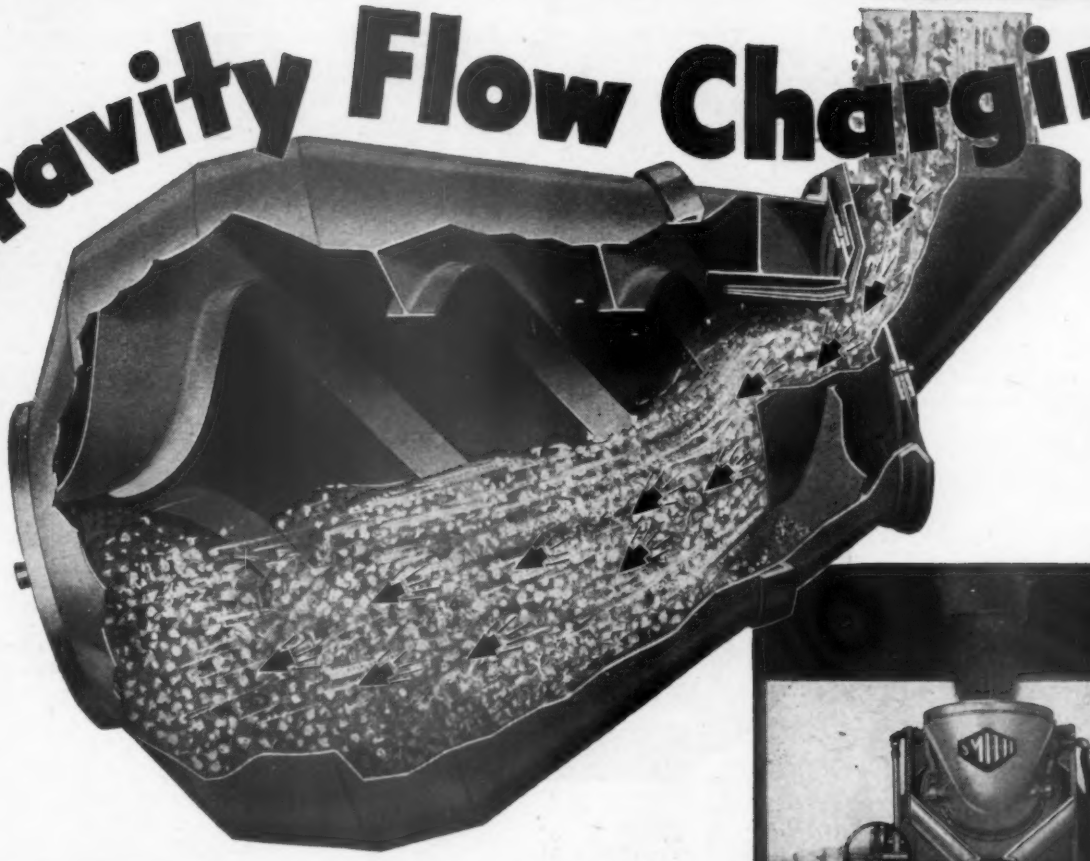
The machine consists of a rotary frame in which four molds are suspended with a feed hopper mounted over the table at the point where the mold is filled. When the mold is filled and settled by vibration, a cut-off slices through the concrete above the mold and closes the hopper. The travel of the compression ram can be varied for different units, and a fixed stop limits the length of the stroke so that the blocks are unvaryingly of the same height.

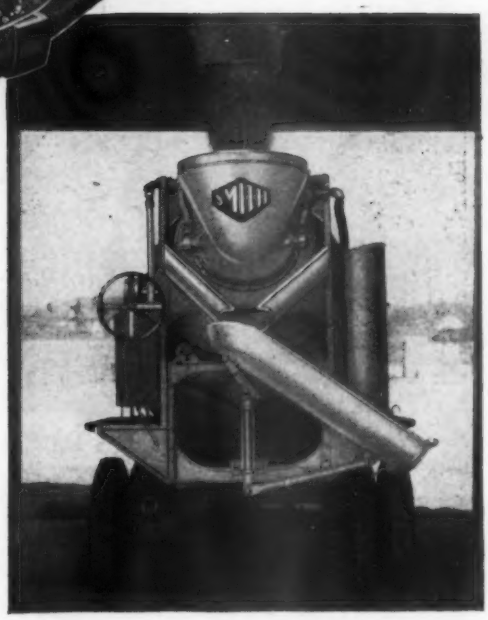
The blocks are stripped upward from the machine above the level of the rotary table, from which position they are delivered automatically to a conveyor. The desirability of a continuous-kiln curing system, which will deliver cured blocks at the discharge end without intermediate handling, has been envisioned and prepared for.



New block machine uses hydraulic pressure and vibration.

Gravity Flow Charging



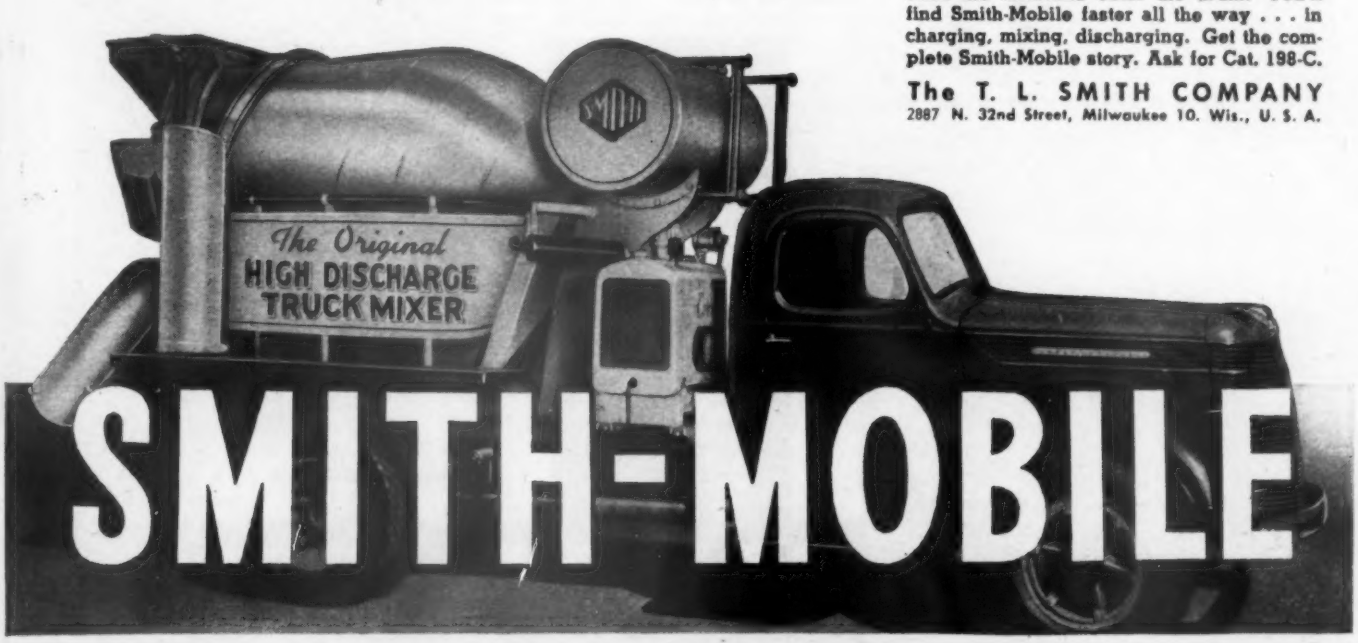


No Drum Obstructions! No Bottleneck! Materials Speed to Opposite End of Drum

Smith-Mobile's big, roomy feed chute and patented drum construction speeds up truck-mixer charging. The aggregates drop vertically into the chute and continue at high velocity through the charging cone (an exclusive and patented Smith feature) toward the opposite end of the drum. *Gravity does the job!* The action of the mixing blades merely accelerates the flow of the materials. There are no shafts or rods to clog up the feed chute. Smith-Mobile is by far the fastest charging truck mixer on the market.

Merely drive your Smith-Mobile into the batching plant with drum rotating in mixing position . . . receive the materials . . . and drive right out again. There's no charging "bottleneck", and mixing starts the instant the materials enter the drum. You'll find Smith-Mobile faster all the way . . . in charging, mixing, discharging. Get the complete Smith-Mobile story. Ask for Cat. 198-C.

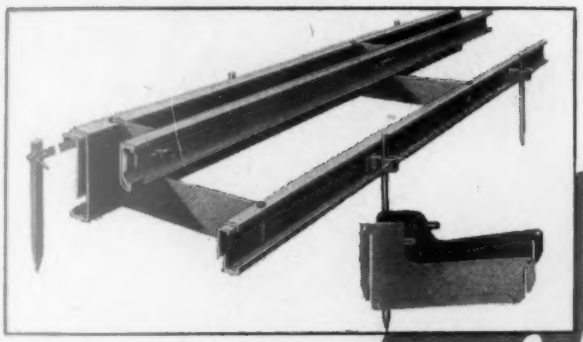
The T. L. SMITH COMPANY
2887 N. 32nd Street, Milwaukee 10. Wis., U. S. A.



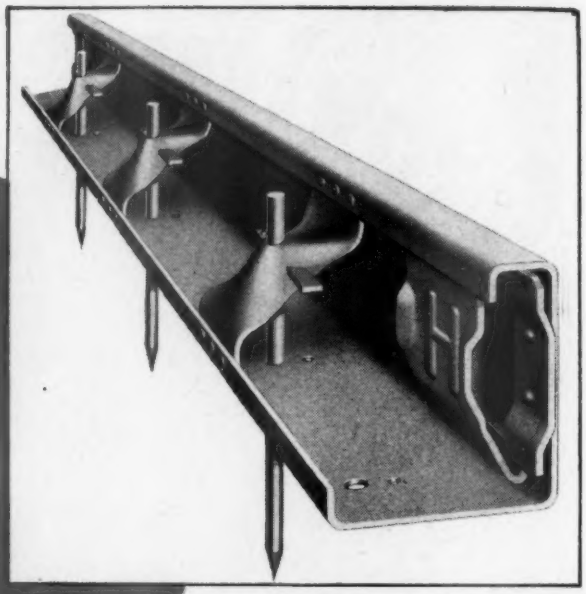
SMITH-MOBILE

A 4580-1P

The CONCRETE MANUFACTURER



Steel Curb and Gutter Forms for any cross section or specification. Catalog S-20.



The New Heltzel Military Highway Form. Catalog S-19.

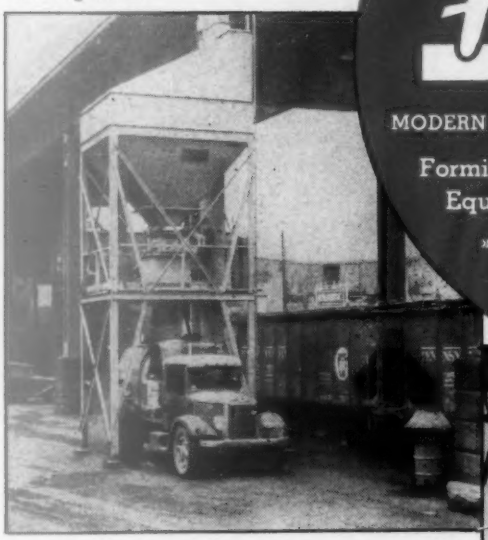
Heltzel
BUILDS IT BETTER

MODERN — DEPENDABLE

Forming and Handling Equipment for all Concrete Projects

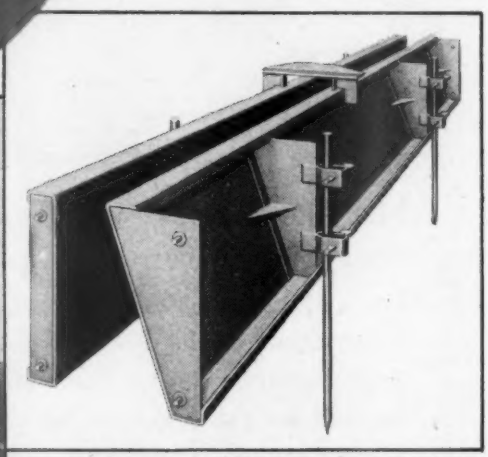
» CONSULT HELTZEL FIRST «

Send for Complete Information Today.



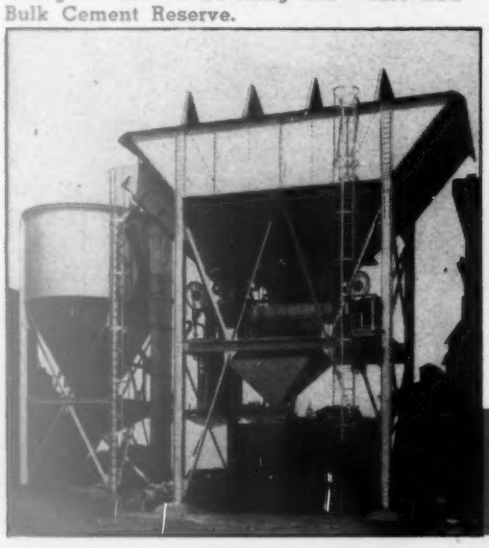
Portable Bulk Cement Plants with built-in elevators. Catalog T-28.

Concrete Buckets from ½ to 3 cu. yd. capacity. Catalog T-29.



Steel Forms for Straight or Battered Curbs with Rigid Radius or Flexible Forms to match. Catalog S-20.

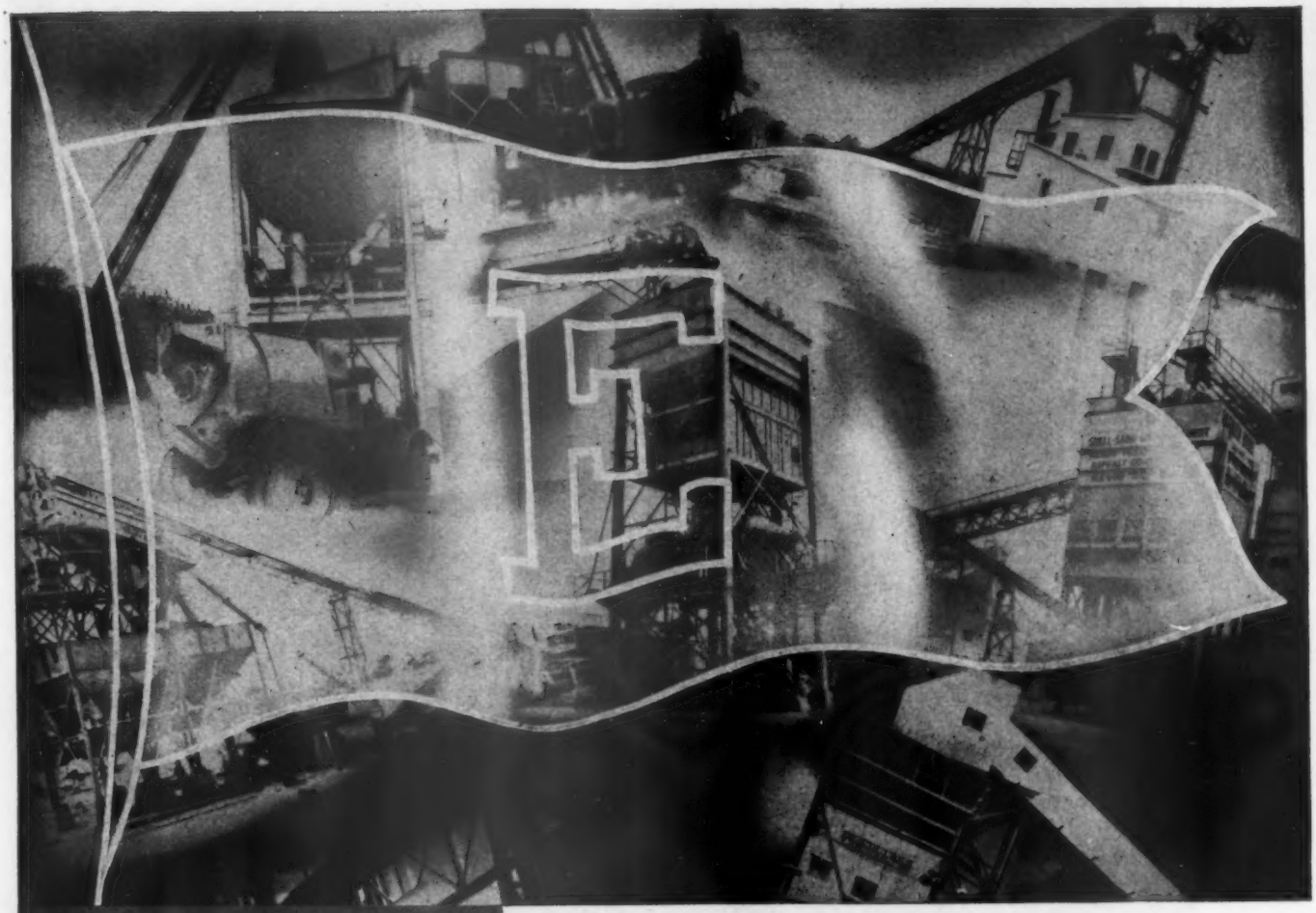
Below — A Typical Heltzel Truck Mixer Charger — 300-ton Batching Bin — 1200 Bbl. Bulk Cement Reserve.



- BINS, Portable and Stationary
- CEMENT BINS, Portable and Stationary
- CENTRAL MIXING PLANTS
- BATCHERS (for batch trucks or truck mixers with automatic dial or beam scale)
- BITUMINOUS PAVING FORMS
- ROAD FORMS (with lip curb and integral curb attachments)
- CURB FORMS
- CURB-AND-GUTTER FORMS
- SIDEWALK FORMS
- SEWER AND TUNNEL FORMS
- CONCRETE BUCKETS
- SUBGRADE TESTERS
- SUBGRADE PLANERS
- TOOL BOXES
- FINISHING TOOLS FOR CONCRETE ROADS

Portable Batching Bins from 35 to 200-ton capacity. Catalog S-18.

HELTZEL STEEL FORM & IRON CO.
WARREN, OHIO · U. S. A.



these users of BUTLER EQUIPMENT who have won the Army-Navy E*

Austin Company
W. S. Bellows
Brown & Root Co.
Cauldwell-Wingate Co.
Doyle & Russell
Henry Ericsson Co.
H. K. Ferguson Co.
George A. Fuller Co.
Great Lakes Dredge & Dock Co.
S. J. Groves & Sons Co.
Johnson, Drake, and Piper Co.
Peter Kiewits' Sons Co.
Long Construction Co.
Mahoney Troast Construction Co.
Manhattan Construction Co.
Maxon Construction Co.
McLean Contracting Co.
John McShain, Inc.
Merritt-Chapman & Scott Corp.
Raisler Corp.
Frederick Snare Corp.
J. Rich Steers, Inc.
James Stewart & Co., Inc.
T. Stuart & Son Co.
Turner Construction Co.
Virginia Engineering Co.
Walsh Construction Co.
Wigton-Abbot Corp.

BUTLER *Congratulates*

its friends and customers who have won the Army-Navy "E" Award — an honor given only for exceptional service in providing vital facilities for waging our global war.

The Butler Bin Company is proud of the part its equipment has played in the speedy completion of the projects of these outstanding construction firms; proud that efficient equipment teamed with efficient management helped to work production miracles.

No accident is the performance of this equipment. Every plant is an Engineered Design, planned to meet all local conditions and tailor-made for each job; efficient, trouble-free operation is built in.

Butler concrete plants, central mixing plants, aggregate plants, and road building equipment are now at work on vital war construction. Whether you are planning a war or post-war project, plan now to use Butler equipment; our engineers will gladly work with you in this first step toward Excellence in Production.

* We have tried to make this list complete to the best of our knowledge; but to any Butler equipment operators who have won the burgee whom we may have missed, our sincerest apologies.

BUTLER
BIN COMPANY
WAUKESHA, WISCONSIN

The KEYSTONE of Modern

CONCRETE

Distribution Service

CONSERCO

Ready Mixed Concrete Truck Rental Service

. . . provides a highly efficient system of truck rental service that enables concrete producers to reach profitable markets over a wide range of territory . . . and without additional capital investment.

CONSERCO furnishes the required number of trucks to handle any hauling job . . . and all other necessary operating and maintenance facilities as well, including 4, 4½ or 5 yd. truck and mixer, truck and mixer upkeep, experienced driver, truck delivered to the job, gasoline, insurance, and oil.

DELIVER ANYTIME, ANYWHERE

Write for full details of the CONSERCO Plan, including rates.

CONSERCO, INC., 1600 South Capitol St., Washington 3, D. C.
Phone: ATlantic 9055

GET YOUR HEAVY DUTY TRUCK THIS SIMPLE WAY

Install a THORNTON FOUR REAR WHEEL DRIVE ON YOUR 1½-2 TON MEDIUM TRUCK

• New heavy duty trucks are very scarce, yet you need one badly to handle your hauling requirements.

Here's How You Get That Truck

Go to your nearest truck dealer and arrange to have a THORNTON Four-Rear-Wheel DRIVE installed. This will convert your new or used 1½-2 ton medium into a six-wheel, heavy duty truck . . . with two driving axles *under* the load . . . capable of hauling 100% more payload, climbing steeper grades, moving loads over bad ground conditions.

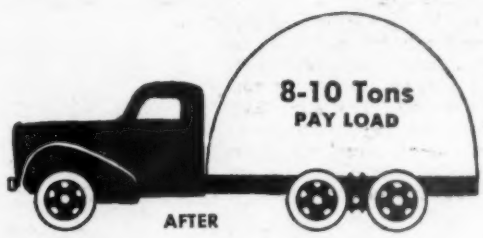
This is the THORNTON DRIVE, consisting of two driving axles; two-speed gear case assembly; "walking beam" type springs; wheels; tires.

THORNTON TANDEM CO.
8701 GRINNELL AVENUE • PLaza 9700
Dept. 5
DETROIT 13, MICHIGAN, U. S. A.

Investigate **THORNTON** *Automatic-Locking* **DIFFERENTIAL** for Replacement in Truck Axles

In Canada see: H. V. WELLES, LTD., Windsor

And the cost of your converted heavy duty truck is less than the original cost of a new heavy truck of the same capabilities.



HERE'S WHAT YOU DO

Write for complete facts. Send for free descriptive folders today.

TEAR OUT AND MAIL

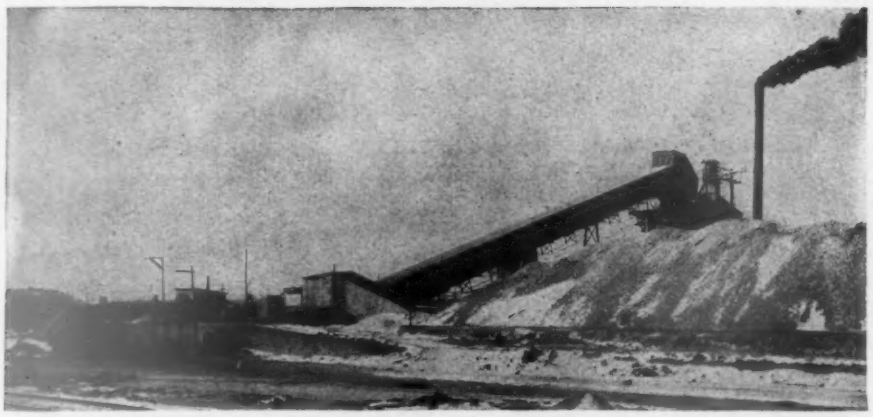
Thornton Tandem Co.
8701 Grinnell Avenue, Dept. 5
Detroit 13, Michigan, U.S.A.

Please send me catalog of facts on changing my 1½-2 ton truck into a heavy duty truck.

Name_____
Address_____
City_____ State_____
Make of Truck_____ Year_____
Used for_____

The CONCRETE MANUFACTURER

NEARLY NEW CONCRETE BATCHING PLANT



Capacity 250-350 Cu. Yd. Per Hour . . . Available for Immediate Delivery.

Complete Butler concrete plant. Excellent condition, used only 7 months. Adaptable for either commercial or construction use where high rate of concrete pour may be required. Equipped for manual, semi-automatic or automatic operational control. See details below.

BATCHING BIN. Bin—250 yd. capacity—190 yd. 3-compartment aggregate 400 bbl. cement.

2 BUTLER CEMENT STORAGE BINS. 2,000 bbl. capacity, 2-compartment, 3,000 bbl. capacity, single compartment. All bins equipped with air jets and steam jets.

BATCHERS. 1 Butler aggregate 5 yd. capacity, complete with beam-type scale, manual operation.

1 Butler cement 3,000 lb. capacity, complete with beam-type scale, manual or automatic operation.

1 Butler water batcher 200 gals. capacity, beam-type scale, complete with 400 gal. surge tank and valves, manual or automatic operation.

ELEVATOR & TRACK SCREW. 300 bbl. per hour capacity, screw 37 ft. long, equipped for either box car or hopper car cement delivery. Complete with 20 hp. electric motor.

CONVEYORS. 1 Barber Greene 36" inclined conveyor 224' 6" long, equipped with: 50 hp. Century motor; one 40 yd. track hopper; one 20 yd. track hopper; one 20 yd. truck hopper. All necessary A frames, trusses and supports included. All hoppers equipped with discharge gates.

1 Barber Greene 36" horizontal conveyor 129' 6" long. Complete with 18 double clam-type fill valves, 20 hp. Century electric motor complete with trusses.

1 Barber Greene 36" inclined conveyor 60' 6" long. Complete with 15 hp. electric motor, trusses and supporters.

All conveyors in excellent condition; two-way Alemite system of lubrication; band-type brake; pivoted distributor, ground level controlled. Conveyors operated under cover while in use. Idler take-up and return idler rollers in good shape. Extra length new 500 ft. belt available.

MISCELLANEOUS. Collecting hopper under batcher, 5 feet cement screw feeder complete with motor for automatic control of cement. Traveling hopper for charging batch trucks. Extra cement buckets, drive chain, elevator chain for cement elevator and track screw, etc.

We usually have on hand late model trucks ranging from 1½ to 10-ton capacities with all types of bodies.

MOTOR TRUCK SALES AND EQUIPMENT COMPANY

Telephone: Prospect 9500

6647 SOUTH WESTERN AVENUE **CHICAGO, ILLINOIS**

McCRACKEN PIPE

Corrugated

— MODEL "T" McCRACKEN MACHINE —

RANGE OF SIZES — 4" to 36" INC. PACKER-ROLLER-HEAD PROCESS DOUBLES OUTPUT AND REDUCES PIPE MANUFACTURER COST 10% ON LARGER SIZES UP TO 50% ON THE SMALLER SIZES. IDEAL EQUIPMENT FOR THE NEW MANUFACTURER ENTERING THE BUSINESS. WRITE FOR DETAILS AND DEFINITE EVIDENCE OF ABOVE FACTS.

— MODEL "R" McCRACKEN MACHINE —

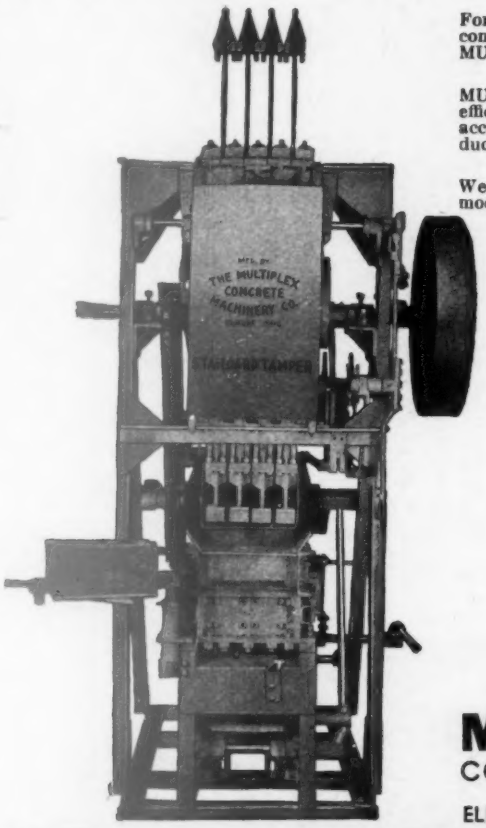
RANGE OF SIZES — 4" to 18" INC. MAKES THE VOLUME SIZES IN WHICH THE SAVING IS GREATEST — 25% to 50%. IDEAL EQUIPMENT FOR THE MANUFACTURER ALREADY EQUIPPED TO MAKE LARGER SIZES BY OTHER METHODS. WILL ADD STRENGTH AND PROFITS TO YOUR BUSINESS RIGHT WHERE IT IS NOW WEAKEST — SMALL SIZES.

CONCRETE PIPE MACHINERY COMPANY

FACTORY AND MAIN OFFICE:
SIOUX CITY 19, IOWA, U.S.A.

EXPORT OFFICE:
50 BROAD ST., NO. 618, NEW YORK 4, N.Y., U.S.A.

MULTIPLEX Machines For Postwar Profits



For a Quick "Take-Off" and sustained pace in concrete block output, reserve one of the MULTIPLEX *high-speed* machines.

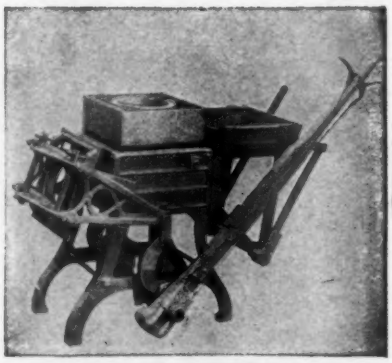
MULTIPLEX offers a wide variety of super-efficient mixing equipment, with all types of accessories necessary for economical mass production.

We can recommend MULTIPLEX units for modernizing *your* plant and enlarging its capacity.

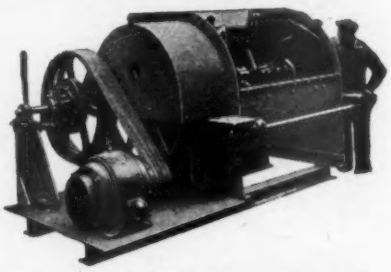
Our universal type MULTIPLEX Standard Tamper for making plain and stripper, or face blocks, on one base. Easily convertible as business expands. Supplied with 4-bar or 8-bar tamper, either power or hand operated.

Write for Booklet describing the MULTIPLEX complete line of concrete mixing equipment, including Double and Single Hand Press Strippers, Power Press Strippers, and Super-Tampers.

MULTIPLEX
CONCRETE MACHINERY CO.
Frank Muenzer, President
ELMORE • OHIO



The MULTIPLEX Flue Block Machine makes ventilated, solid or lightweight units, including all attachments for ventilator and stove pipe openings.



MULTIPLEX Multi-Mixer with reverse screw-type action insures fast and thorough mixing of every batch. Side, end or bottom discharge.

Make 6" to 48" CONCRETE PIPE with ONE Machine

Produce Pipe Profitably

Universal's "All-Purpose" Machine produces Concrete Pipe in all sizes from 6" to 48"—and shows you a worth-while profit. With a tamping capacity of 680 strokes per minute, your product is more dense, durable, finished in appearance. We can also outfit you for making larger sizes, up to 135".

Write today for Catalog and Details.

UNIVERSAL Trade Mark
CONCRETE PIPE CO.
Columbus 15, Ohio

ARE YOU SELLING THE BIG FARM MARKET CONCRETE PRODUCTS?

use

MARQUETTE HIGH EARLY STRENGTH PORTLAND CEMENT

. . . and get your share of this twenty billion dollar farm business.

MARQUETTE CEMENT MANUFACTURING COMPANY
Chicago . . . Memphis

Are you ready?

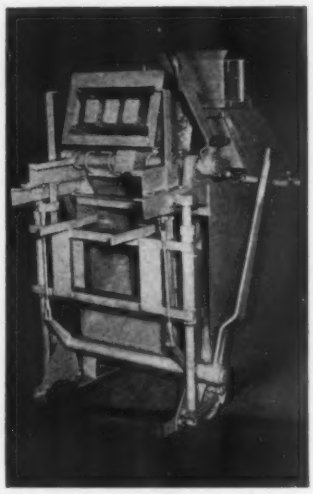
Building programs are beginning to move fast. Are you ready?

N & F bins, with proper conveyors to store and load sand and gravel, will cut labor costs, cut trucking needs, save time and money at every turn. Stave construction—can be moved for re-erection. Any capacity. Guaranteed. Get catalog now.

THE NEFF & FRY COMPANY
CAMDEN, OHIO

The Kirkham Vibrator
CONCRETE BLOCK MACHINE

- *Sturdy Construction.*
- *Moderate in Price.*
- *Low Upkeep.*
- *Simplicity of Operation.*



Various size molds quickly interchangeable.

Liner plates in molds replaceable when worn.

Complete vibration insuring dense, durable blocks.

Plain wood or steel pallets adaptable to all boxes.

Concrete Transport Mixer Co.
650 Rosedale Avenue
St. Louis 12, Missouri

FASTEST POURING

Almost Any Job of Concrete Can be Done Faster with JAEGER TRUCK MIXERS

"HIGH DUMP"

Millions of yards of Jaeger Truck-Mixed Concrete on major war work (exceeding the output of all other makes combined) prove the advantages of these motorized concrete plants. Nimble, flexible and fast, they speed placement, solve problem of extended or continuous pours.

or "LOW CHARGE" Type

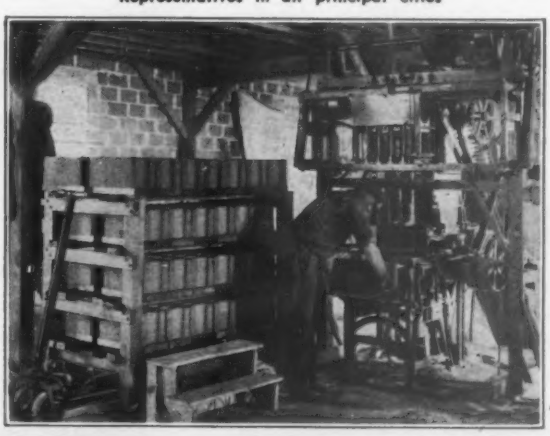
THE JAEGER MACHINE CO.,
602 Dublin Avenue
Columbus, Ohio

Mixers—Pumps—Hoists
Paving Equipment

BARRETT LIFT-TRUCKS
ONE MAN HANDLES 48 BLOCKS NO BREAKAGE

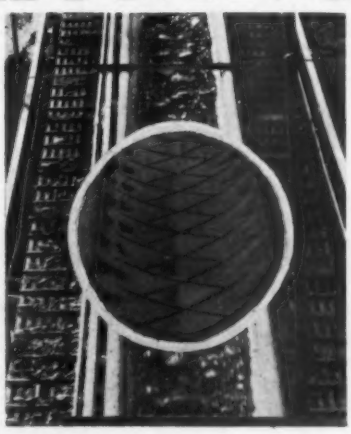
Handle your green concrete products the way that more than 800 other concrete products plants do. WITH BARRETT LIFT-TRUCKS EQUIPPED WITH A SUPER-SPRING FRAME AND RUBBER TIRES. Eliminate breakage — joggling out of shape and spoilage. Save time, money and labor by eliminating all unnecessary handling and breakage. Take your blocks direct from the machine to the curing room—with ease and dispatch. One man handles 48 blocks of the 8x8x16 size—or, 32 blocks of the 8x12x16 size.
Write for illustrated circular.

BARRETT-CRAVENS COMPANY
3251 West 30th Street CHICAGO, ILL.
Representatives in all principal cities



AMERICAN
LIGHTNING

ribbed centre
CONVEYOR BELT



The patented pattern of this belt, enables it to carry even wet loads up improbably steep grades without slipping. It is possibly the best belt in the world for conditions where slipping is bad.

The AMERICAN RUBBER Mfg. Co.

PARK AVENUE AND WATTS ST. — OAKLAND 8, CALIFORNIA

RUBBER PRODUCTS *for* INDUSTRY

The CONCRETE MANUFACTURER

There's a Great Day Coming

—and a great new line of STEARNS Block Machinery

This letter, sent to all STEARNS representatives, carries a vital message to all Concrete Products Manufacturers.

1. **A revolutionary new block making method**
2. **Will be ready for post-war block plants**
3. **Adapted to present Joltcretes**

The Pioneers and Developers of vibration block equipment. Also a complete line of tamp machines and mixers. Made in Adrian, Mich.—recognized for a quarter of a century as Block Machinery Headquarters.

STEARNS MANUFACTURING CO. - ADRIAN, MICH.
GENE OLSEN, PRESIDENT

To all Stearns Representatives: October 21, 1944

For the third time Stearns employees have won the Army-Navy "E" Award for excellence in war production.

Rightfully, you and all the others in the Stearns Organization are proud of this distinction, unequalled in the Concrete Products Machinery Industry.

In addition to its production of war goods, Stearns has furnished Concrete Machinery maintenance parts and new equipment at almost peace time volume.

Furthermore, our research has developed a new and revolutionary improvement in the method of manufacturing concrete blocks. This amazing new process affects every block plant in America. It is now being incorporated in a great new line of Stearns block machinery that will be announced at the close of the war. Appropriate parts will be available to make this new process adaptable to all the Joltcretes already installed.

As V-Day draws closer, the demand for block equipment is exerting tremendous temptation to ease off on war production. Let others yield – Stearns will not. We will never let down the boys on the fighting fronts.

We're sorry you will have to wait a little longer for these new machines. Meanwhile make use of your mature experience by helping customers get the most out of their present equipment – and showing them the advantages of waiting for Post-War improvements and quality

Cordially yours,
STEARNS MANUFACTURING CO., INC
Gene Olsen
President – General Manager

Buy a machine of Proven Worth

In War – In Peace
STEARNS LEADS

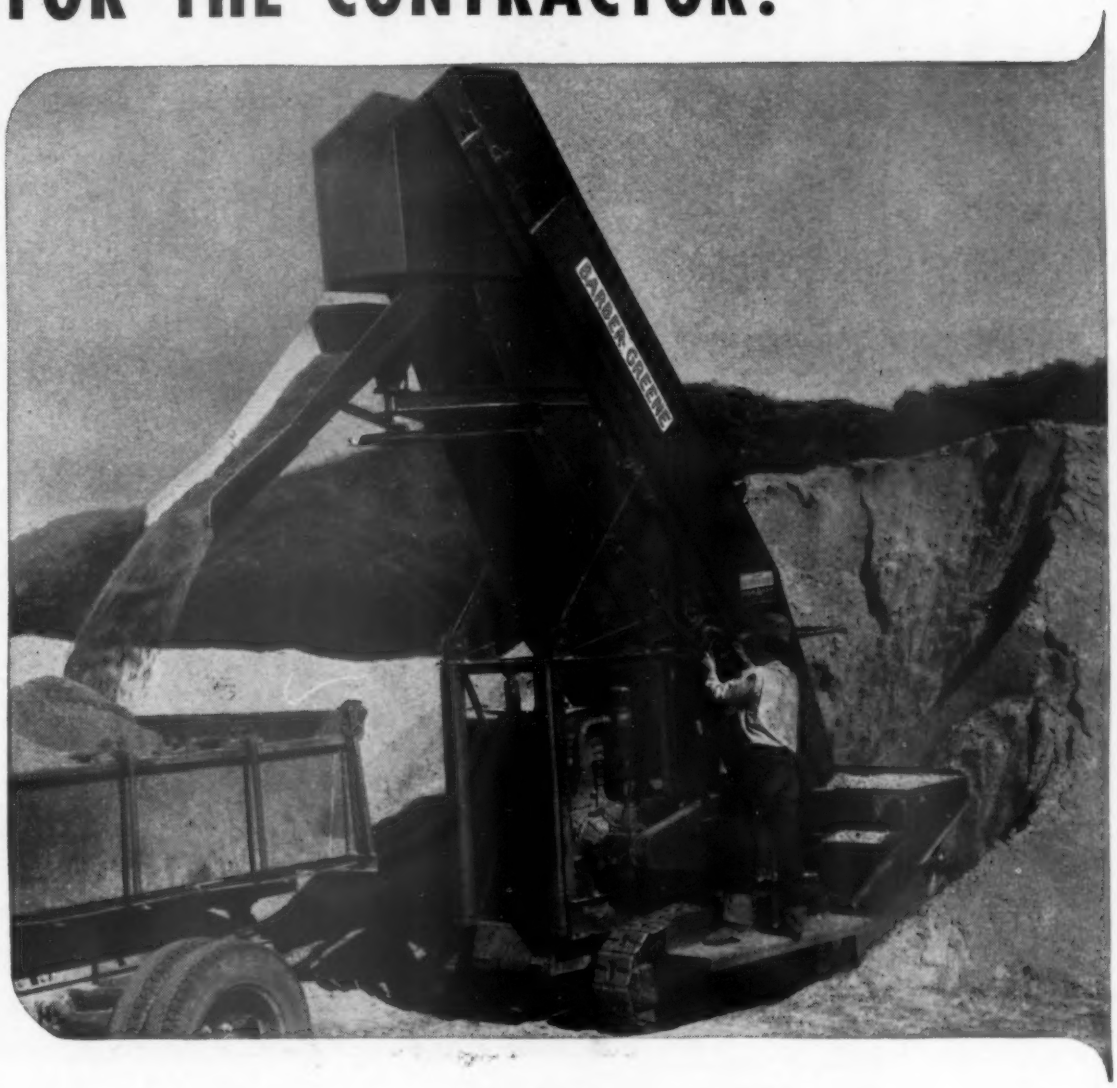
STEARNS
MANUFACTURING CO. - ADRIAN, MICH.

GENE OLSEN, PRESIDENT

Designers and manufacturers of modern Concrete Products Plant Equipment: Vibration and tamp-type block and brick machines • Mixers • Skip Loaders

Licensed under the basic Gelbman Vibration Patents

HOW A B-G BUCKET LOADER CUTS COSTS FOR THE CONTRACTOR!



• Any contractor knows that the continuous operation of a bucket loader yields a higher yardage of bulk material at a less cost than any other method of loading. But, the cost of operating a Barber-Greene Bucket Loader is lowest of all. Here are a few of the long-life and time-saving features that keep expenses at rock bottom:

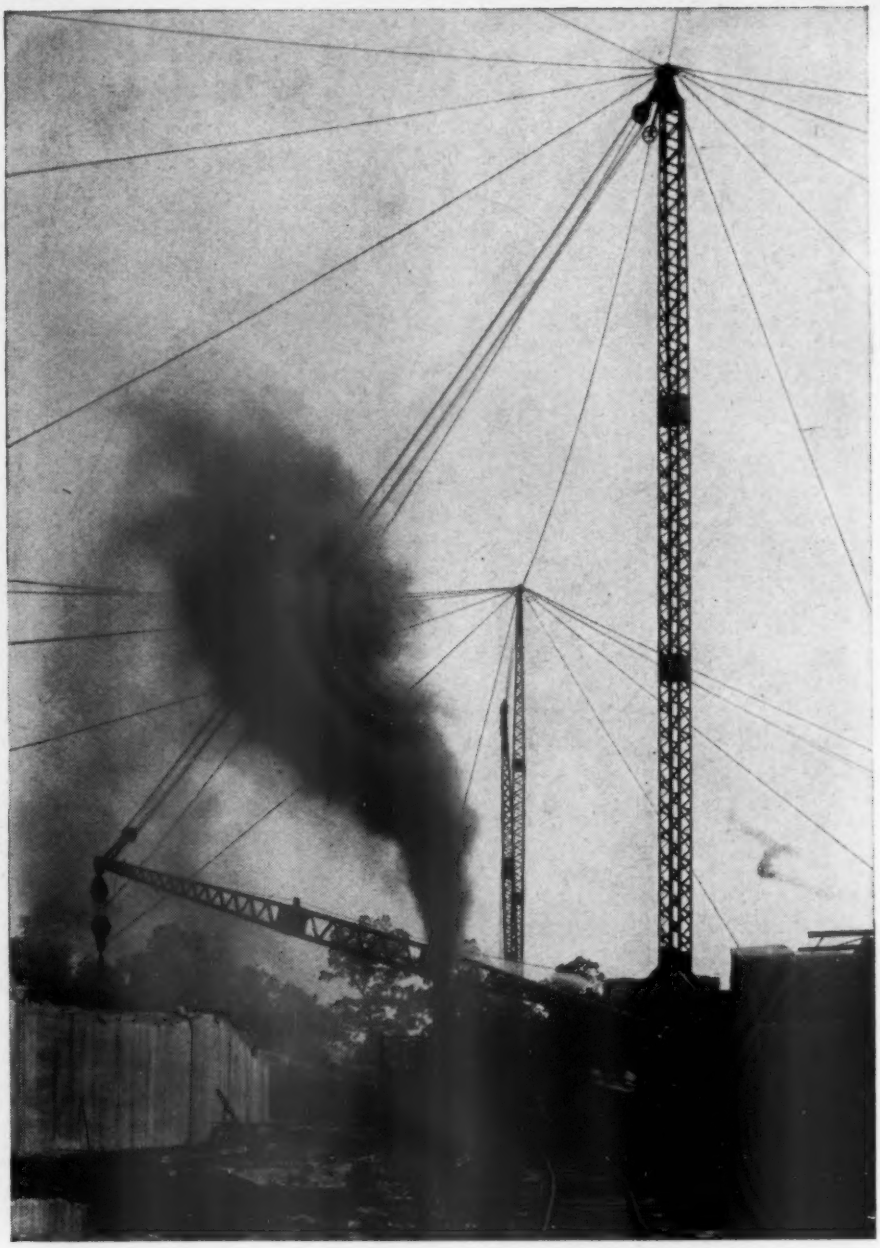
1. Strain and damage to boom frame are prevented because the thrust of loading is transmitted directly to the crawlers through push arms.
2. Clean pick-up, requiring no additional hand labor, is assured by the automatic follow-up scraper.
3. Wear of working parts is reduced with use of a double transmission that permits 12 crowding speeds.
4. An automatic overload release prevents breakage of operating units.
5. Points of greatest wear on the buckets are faced with an abrasion-resisting weld.

For complete details see your B-G representative or write the Barber-Greene Company, Aurora, Illinois.

45-02

Barber-Greene B-G *Constant Flow Equipment*

ROPES FOR THE "MECHANICAL GIRAFFE"



That's what somebody once called a derrick—a "mechanical giraffe." One looks just about as awkward as the other. But there the resemblance ends. When the derrick boom swings into action, with a load dangling in mid-air from the hoist line, things get done in a hurry.

The derrick depends for much of its lifting capacity on the slim, tough wire rope that lowers and raises the boom . . . and the rope that handles the actual load. Whenever you see great blocks of stone piled three and four high, there's a good chance that Purple Strand had a hand in moving and stacking them. Purple Strand is Bethlehem's premium-quality rope, and it's engineered for loads like the huge stone chunks that are shown in the picture.

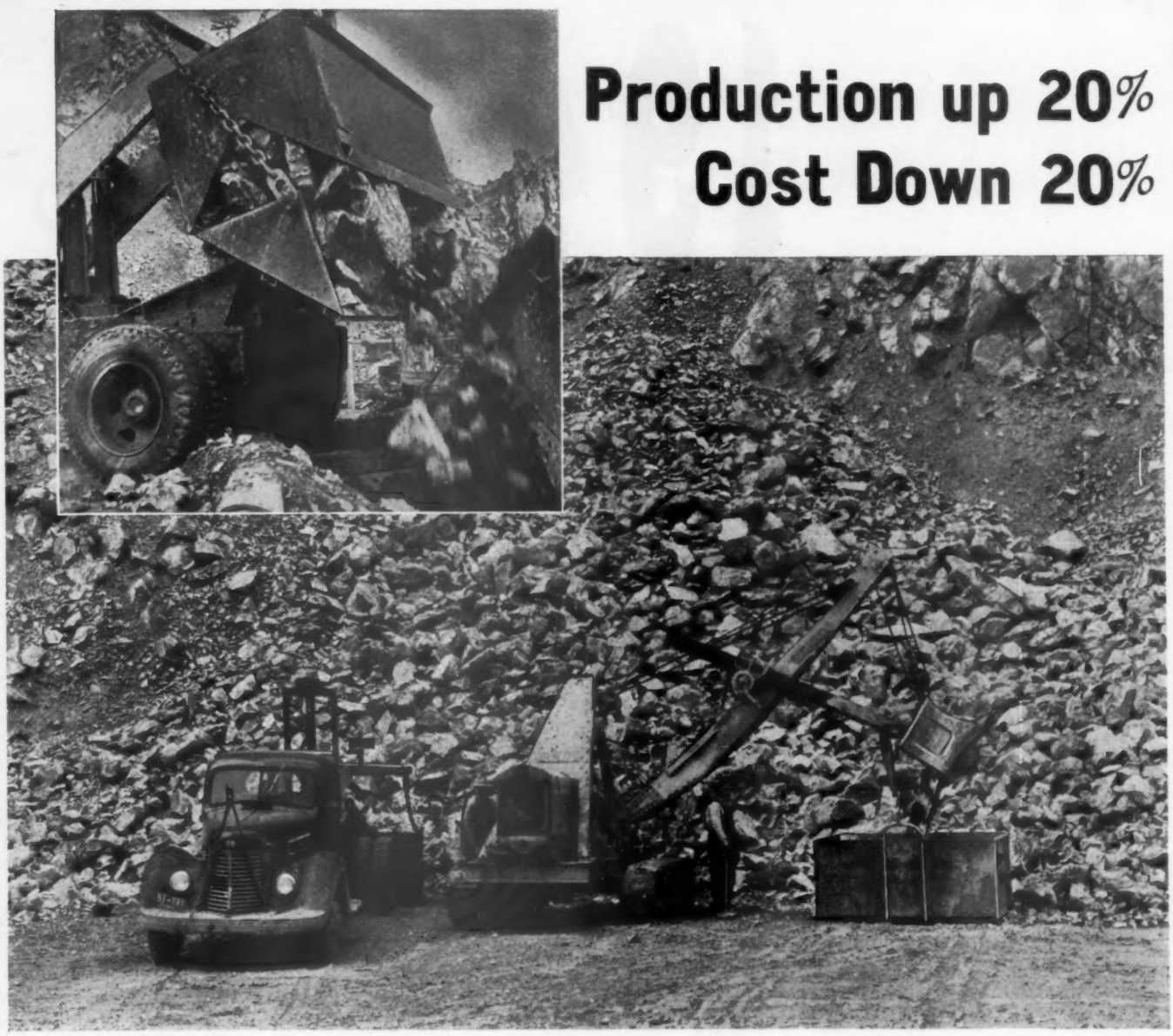
In wire-rope language, Purple Strand means strength . . . tremendous lifting power. And you can combine this strength with high flexibility by getting Purple Strand in the Form-Set construction. Purple Strand Form-Set is a preformed rope, one that's been freed of many internal stresses and conditioned for bending around sharp turns. This "bendability" means longer life; greater resistance to bending fatigue; lower overall rope costs.

Whenever a derrick needs rerigging, insure its top performance by using Purple Strand. And don't forget, Bethlehem also makes a full selection of ropes for guy lines —with a bethanized zinc coating for protection against weather.

When you think WIRE ROPE

. . . think BETHLEHEM

Production up 20%
Cost Down 20%

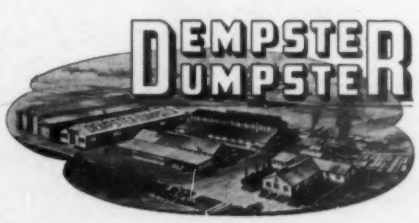


★ Here is a typical example of what takes place when a quarry changes over to the Dempster-Dumpster system of hauling material.

In the operation illustrated above—a large western limestone quarry—the method of hauling was changed from track and cars to a Dempster-Dumpster Unit and a number of detachable bodies. Although bodies are loaded by mechanical shovel, production has been increased 20% and costs of production reduced 20%. Where hand loading is the method used in loading the detachable bodies, production and savings are usually greater.

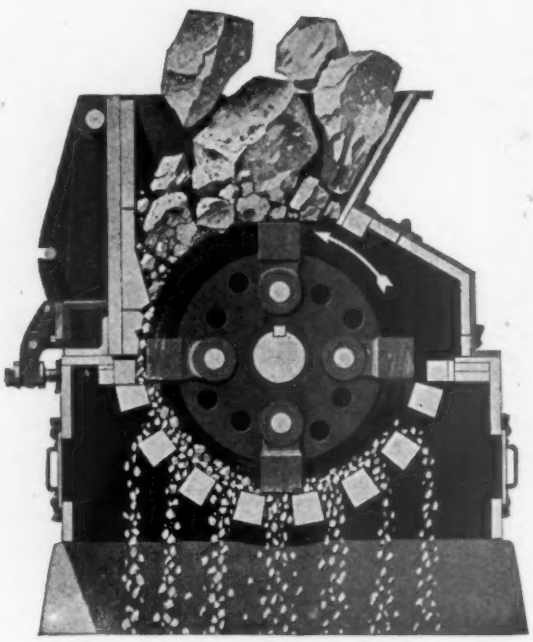
No amount of words can explain how simply and easily the Dempster-Dumpster can make such savings possible. But to see it in operation is all that is necessary to convince you that once put in operation, increased production and great reduction in cost are sure.

When one Dempster-Dumpster and a number of bodies can do the work of 3 to 5 conventional trucks, big savings in gas, tires, trucks and manpower are sure. Write for complete information. Dempster Brothers, Inc., 15 Springdale, Knoxville, Tenn., U.S.A.



INCREASE CRUSHED STONE PRODUCTION WITH 1946

JEFFREY
CRUSHERS AND PULVERIZERS



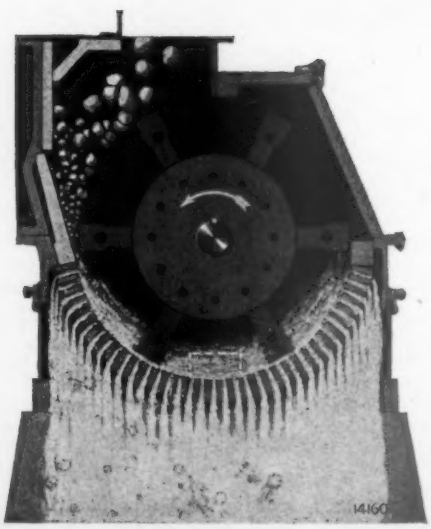
Jeffrey
Miracle Hammer
Crushers for
Primary
Service

Jeffrey is in a position to furnish you with a complete line of impact primary crushers and secondary pulverizers.

Our trained staff of reduction engineers and metallurgists insure the proper application and the best abrasive-resistant metals — for increased production and economical operation.

Automatically - controlled vibrating feeders can be furnished to provide uniform, maximum feed, which in many cases increase capacities up to 20%.

Investigate.



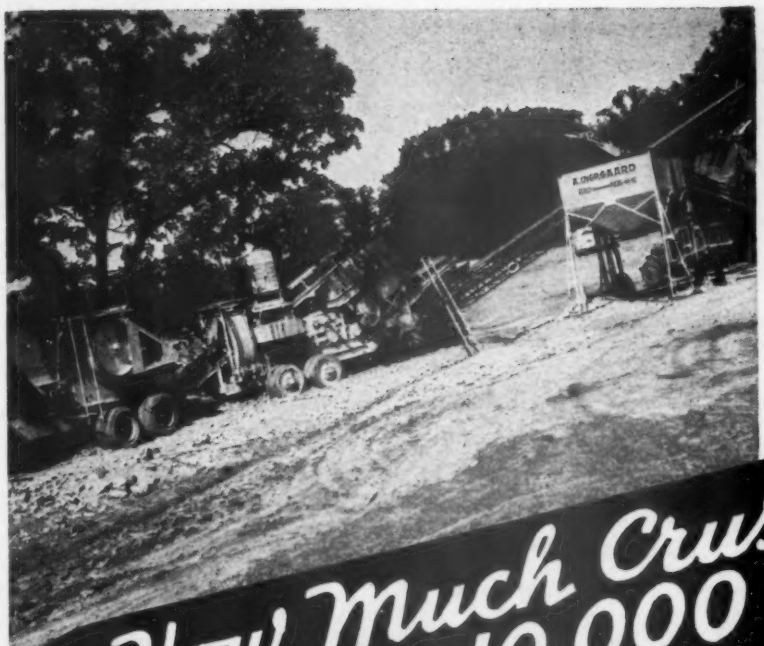
Jeffrey Swing
Hammer Pulverizers
for
Fine Grinding

THE JEFFREY MANUFACTURING COMPANY

Established in 1877

917-99 NORTH FOURTH STREET, COLUMBUS 16, OHIO

Baltimore 1	Charleston 30	Denver 2	Huntington 19	Pittsburgh 22
Birmingham 3	Chicago 1	Detroit 13	Milwaukee 11	St. Louis 3
Boston 16	Cincinnati 2	Harlan	New York 7	Salt Lake City 1
Buffalo 2	Cleveland 13	Houston 5	Philadelphia 3	Scranton 3



These two Universal Crushing Plants are supplying crushed rock for the Rock County, Wisconsin airport (Class IV) near Janesville, Wisc. Plant at left, owned by Art Overgaard, Elroy, Wis., consists of 546-P primary unit with 20″ x 36″ jaw crusher and secondary unit with 30″ x 18″ crushing rolls, double deck screen, rotovator and conveyors. Plant below owned by Rock Road Construction Company, Chicago, consists of two complete plants in tandem—one with 10″ x 36″ jaw crusher, double deck screen and conveyors and one with 40″ x 22″ crushing rolls and 2¾ deck screen, rotavator and swivel conveyor. Over 200 yds. per hr. of 1″ material are produced.

How Much Crushed Rock for 10,000 Airports?

We could tell you to the yard, if we knew the size of each and the specifications. We could also tell you which of the more than 50 Universal Portable Crushing, Screening and Loading Plants would turn out the crushed rock or gravel faster to specification and at the lowest cost per yard. Ten thousand is a lot of airports, but it would not take Universal plants very long to pile up the material needed for them. Scores of Universals are now providing landing field materials for the South Pacific Islands retaken from the Japs. There'll be a lot of airports built after the war — how many, we're not sure — but, if you figure on furnishing the crushed rock for any of them, why not check with your Universal dealer? He may have some helpful suggestions.

UNIVERSAL ENGINEERING CORP.
Cedar Rapids, Iowa

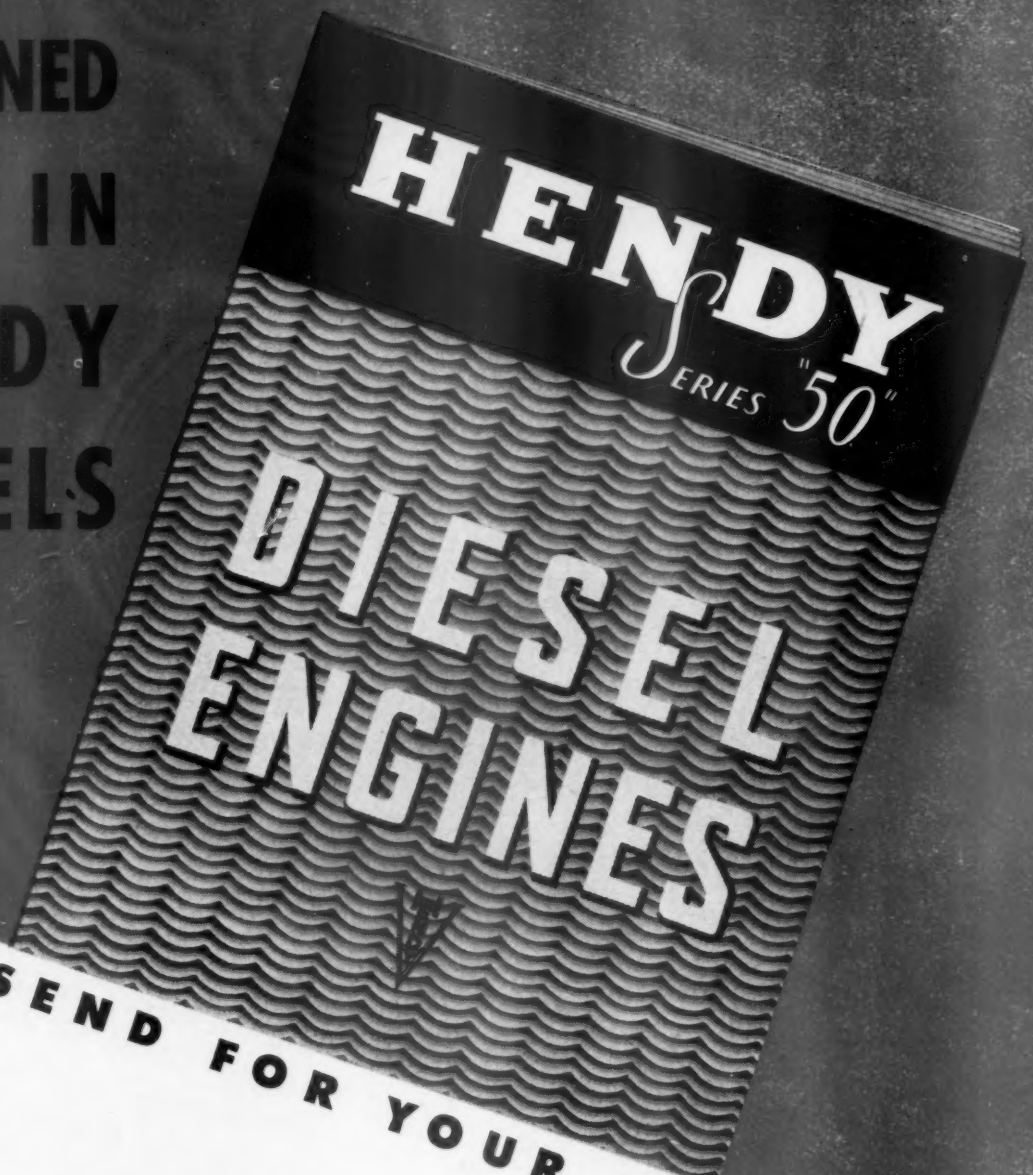
UNIVERSAL
619 C Avenue West

ARMY E NAVY

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

THIS NEW CATALOG SHOWS ALL THE 22 FEATURES

COMBINED ONLY IN HENDY DIESELS



SEND FOR YOUR COPY TODAY

This new 16-page catalog is illustrated throughout with photographs and drawings showing details of the modern features of Series 50 Hendy Diesels. Series 50 Diesels range from 350 to 675 horsepower, and are available in models for marine or stationary applications, or with generators as complete Diesel-generator sets.

OR CONTACT BRANCH OFFICE NEAREST YOU

COUPON FOR CATALOG

JOSHUA HENDY IRON WORKS
Sunnyvale, California

Please send me your new catalog on Hendy Series 50 Diesel Engines.

Name .....

Company .....

Address .....

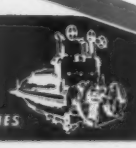
JOSHUA HENDY IRON WORKS
ESTABLISHED 1856
SUNNYVALE, CALIFORNIA

77-D-12-Y

Branch Offices: BOSTON · BUFFALO · CHICAGO · CINCINNATI · CLEVELAND · DETROIT · NEW YORK
PHILADELPHIA · PITTSBURGH · SAN FRANCISCO · LOS ANGELES · WASHINGTON

TURBO-GENERATORS

REDUCTION GEARS


STEAM TURBINES

DIESEL ENGINES

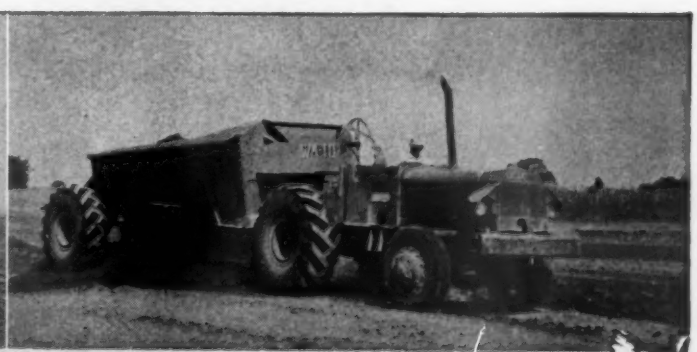
Dependable EUCLIDS COST LESS TO OWN

On scores of big earth and rock moving jobs, and in industrial operations too, Rear-Dump and Bottom-Dump EUCLIDS are moving more yards and tons per hour at consistently lower cost. Carrying pay loads of 15 to 30 tons at speeds up to 33 m.p.h., EUCLIDS cut down the round trip time from the loading unit to dump and carry more pay loads per hour.

Designed and built throughout for the hard service of off-the-highway hauling, EUCLIDS actually cost less to own than ordinary hauling equipment. Lower operating and maintenance cost, plus dependable trouble-free operation, has made Euclid the favorite equipment of contractors and industrial users for hauling all kinds of heavy excavation and materials.

If you need new equipment for a current job or are planning for your peace time requirements, be sure to consult your Euclid distributor or write us for descriptive literature.

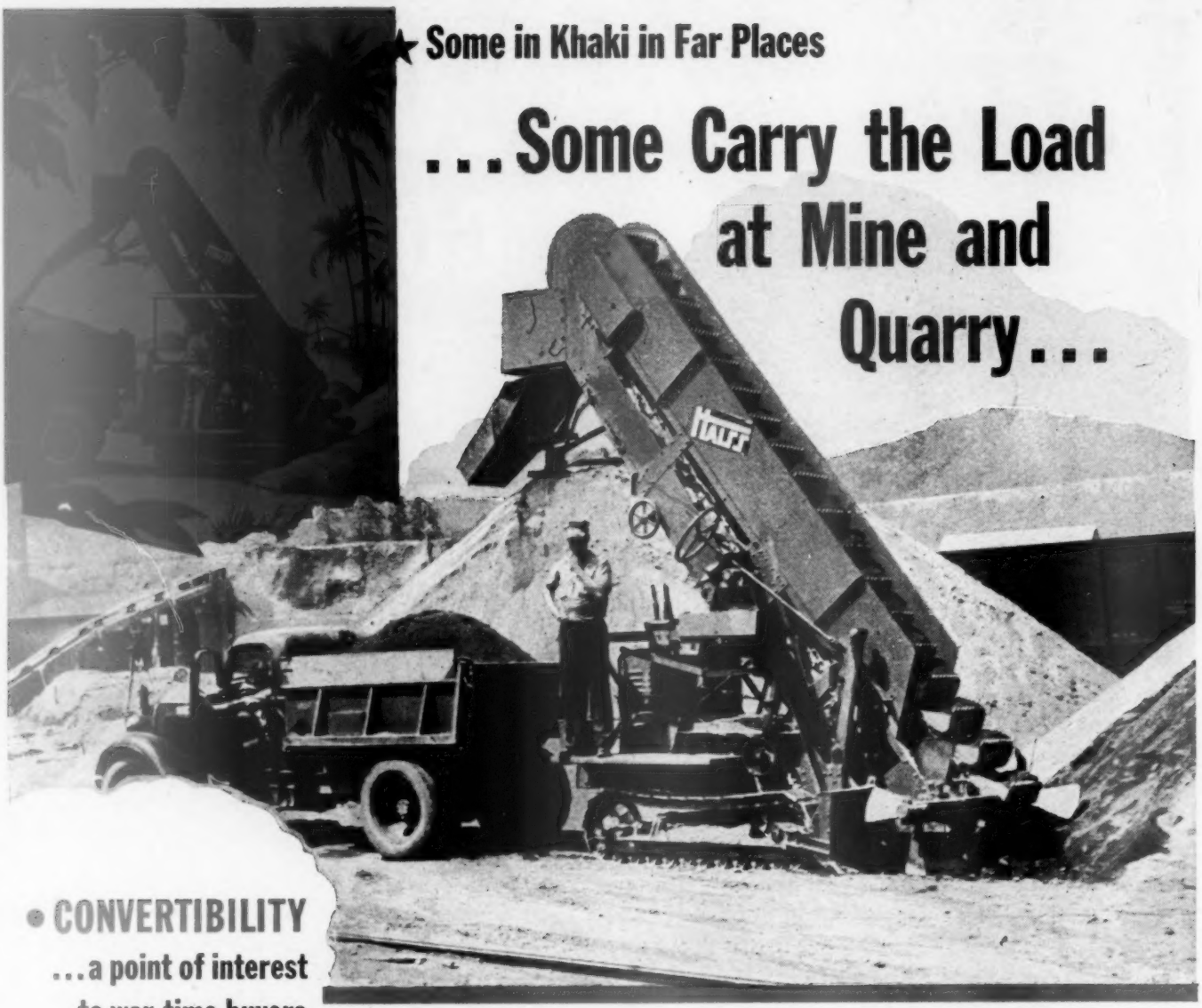
The EUCLID ROAD MACHINERY Co.
Cleveland 17, Ohio



EUCLID SELF-POWERED HAULING EQUIPMENT For EARTH ROCK COAL ORE

★ Some in Khaki in Far Places

...Some Carry the Load at Mine and Quarry...



• CONVERTIBILITY ...a point of interest to war-time buyers

The Haiss "75" Loader on creeper mounting is designed for the substitution of wheels and pneumatic tires, when the latter are again freely available.

No reason, then, to postpone buying.

The EXTRA STAMINA inherent in the simple, functional design of HAISS LOADERS is real. Whether loading precious chromite ore or hurrying repairs to a bomb-torn air field, they put up big truck-loads FAST . . . It's the pay off for HAISS superiority in positive self-feeding, efficient slow-speed "crowding" and a Haiss-designed heavy-duty transmission—with all clutches and gears running in oil . . . These same advantages make the HAISS a best buy on every loading job. *Catalog on Request.*

GEORGE HAISS MANUFACTURING CO., INC., 142nd St. & Rider Ave., New York 51, N. Y.

DISTRIBUTORS IN PRINCIPAL CITIES

•

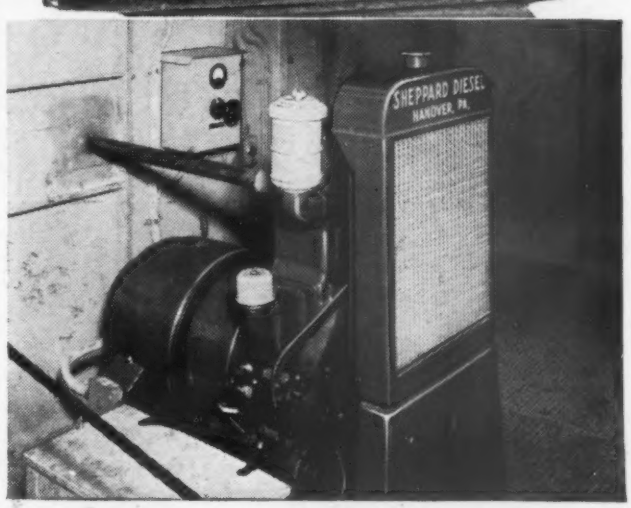
Wire, write or phone for prices and catalog data

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS

CHEAPER FUEL MEANS

Cheaper Electricity WITH A Sheppard DIESEL GENERATING SET



Sheppard Generating Sets provide low-cost, dependable lighting for 30-ton revolving barge-mounted cranes. These cranes are being built by Turney Manufacturing & Engineering Co. of Houston, Texas... Washington Iron Works, Seattle, Wash.... Pointer-Willamette Co., Portland, Ore. Note cleanliness and compact arrangement of entire unit.

LOWERS NIGHT OPERATING COSTS FOR HUGE 30-TON REVOLVING CRANE

IN hundreds of installations like this one, Sheppard Diesel Generating Sets cut electric bills for users. These generating sets make low cost electricity from cheap fuel. They'll even operate efficiently on the lowest priced domestic furnace oil! And use less of it! . . . for Sheppard Diesels are engineered to squeeze every last watt of power from every last drop of fuel!

Besides being thrifty, Sheppard Diesels are the simplified Diesels that give dependable service in the hands of any average operator. They're delivered fully adjusted . . . fully equipped. A Sheppard goes on the job fast . . . and stays on the job for keeps.

A limited number of Sheppard Diesels are now available. Let us advise you about obtaining WPB approval.

Mail coupon today for free literature describing Sheppard Diesel Generating Sets.

POWER UNITS, 8 TO 50 HP • GENERATING SETS, 3 TO 30 KW

R. H. Sheppard Company
113 Middle St., Hanover, Pa.

Please send me free literature describing Sheppard Diesel Generating Sets.

Name .....

Firm Name .....

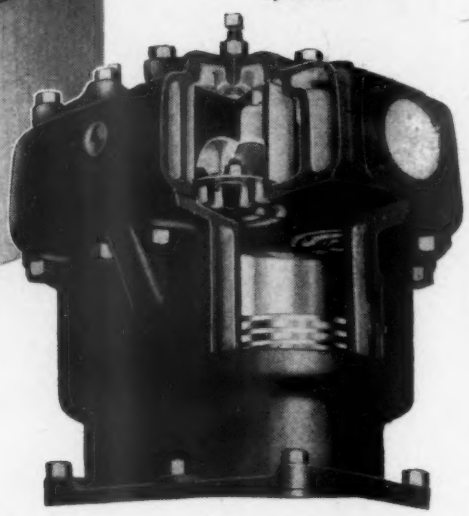
Address .....

.....

Sheppard ALL AMERICAN DIESEL GENERATING SETS

Never mind the WEATHER

Water-Jacketed Cylinder



. . . with an ALL Water-Cooled Portable!

Hot weather . . . cold weather, it makes no difference in the operating efficiency of a Gardner-Denver "all water-cooled" Two-Stage Portable Compressor. Its completely water-jacketed compressor cylinders keep cool in summer . . . warm in winter. Temperature or altitude extremes do not reduce its capacity or limit its operation. Hot or cold, it keeps right on delivering.

"All water-cooling" has other exceptional advantages. Discharge temperatures are lower... effecting considerable savings in oil consumption and in valuable air hoses. High efficiency is sustained . . . air output is higher . . . horsepower requirements lower. And Gardner-Denver "all water-cooled" portables require no pampering, regardless of operating conditions.

GARDNER-DENVER SINKERS

Popular with contractors and operators alike, Gardner-Denver Sinkers are noted for their smooth, easy riding characteristics and perfect balance, assuring more footage per shift.

For complete information on Gardner-Denver Portable Compressors and Sinkers, write for illustrated bulletins. Gardner-Denver Company, Quincy, Ill.

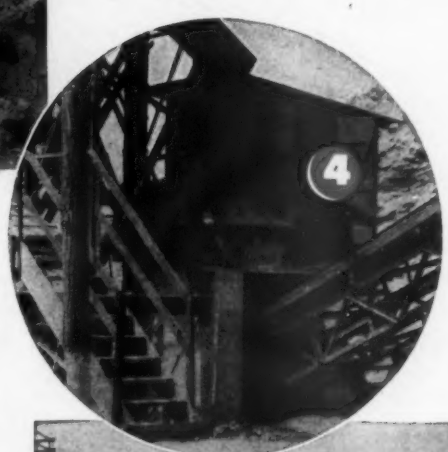
GARDNER-DENVER *Since 1859*

WARTIME PROBLEMS of New Sand and Gravel Plant SOLVED BY...

TELSMITH

1 *Telsmith Super Scrubber*
2 *Two Telsmith Sand Classifiers*
3 *Telsmith Sand Drag*
4 *Telsmith Gyrasphere Secondary Crusher*

G-11



● Hempt Brothers, Harrisburg, Pa., are quarry and gravel plant operators. War work demands for concrete necessitated building a new plant on a large deposit near Elizabethtown, Pa. Quantity processing of the crumbly quartzose conglomerate requires generous crushing, screening, classifying capacity. Yet co-operation with the war effort meant holding the use of new machinery and critical materials to a minimum.

One of those tough, it-can't-be-done problems. But Telsmith Engineers came through with the right answer and the right equipment. The result is a balanced, flexible, smooth-working plant turning out 75-100 tons per hr. washed silica sand.

From a scalping screen following the primary breaker, plus 3/4" material goes to a No. 36 Telsmith Gyrasphere Secondary Crusher in closed circuit with the scalper. Minus 3/4" goes to a 4' x 10' Telsmith double deck Pulsator Screen over a 35-ton steel bin. One size of crushed gravel is stored in bin; and plus 3/16" pebbles are chuted to a 40" x 22" Telsmith high speed, roller bearing Double Roll Crusher with adjustable flow belt feeder. This crusher is also in closed circuit. Minus 3/16" sand size goes through a 72" x 10½' Telsmith Super Scrubber and then to two large-bowl, 3-side overflow, twin-screw Telsmith Sand Classifiers making concrete sand which goes to a 200-ton steel bin or to ground storage. Classifier overflow is flumed to a 60" x 30' Telsmith Sand Drag which produces plaster sand. For details on Telsmith equipment *get Bulletin G-15.*

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

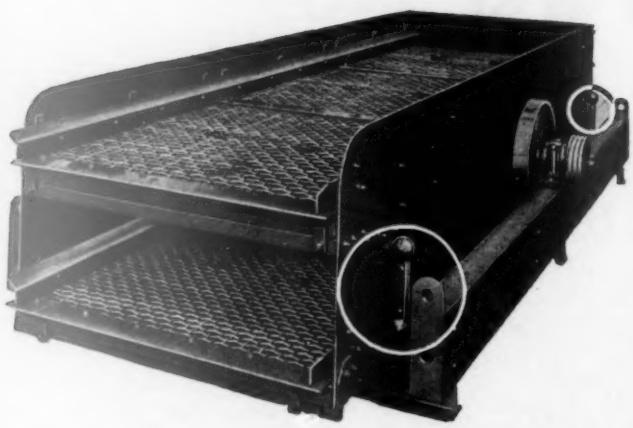
Cable Addresses: Sengworks, Milwaukee—Concrete, London

51 East 42nd St. New York 17, N. Y.
211 W. Wacker Drive Chicago 6, Ill.
713 Commercial Trust Bldg. Philadelphia 2, Pa.
247 Third Street Cambridge 42, Mass.
Boehck Eqpt. Co. Milwaukee 3, Wis.
Mines Eng. & Eqpt. Co. San Francisco 4—Los Angeles 14
Brandeis M. & S. Co. Louisville 8, Ky.
Rish Equipment Co. Charleston 22, & Clarksburg, W. Va.
Rish Equipment Co. Roanoke 7, & Richmond 10, Va.
North Carolina Eqpt. Co. Raleigh and Charlotte 1, N. C.
Wilson-Weesner-Wilkinson Co. Knoxville 8, & Nashville 6, Tenn.

Get Ready Now!

FOR THE COMING ROAD BUILDING PROGRAM

WITH A SECO PC* VIBRATING SCREEN



PC—Positive Control of the Gyrating Action*

When the "go signal" is given for the approaching road building programs, you'll want to have the kind of equipment that will enable you to get the maximum tonnages at the lowest possible cost.

For your screening requirements you'll want a vibrating screen that will screen more tons per hour, at lower cost per ton and one that will deliver long dependable service at maximum capacities. You'll want a Seco, the only vibrating screen with positive control of the gyrating action—your assurance that every inch of screen is 100% on the job—under all load conditions. Hundreds of leading operators and contractors use and endorse Seco screens.

Send for Free Illustrated Catalog Today!
Dept. A

SECO SCREEN EQUIPMENT CO., INC.
9 Lafayette Avenue, Buffalo 13, N. Y.

HOW FLINK ONE MAN SPREADER PAYS WAY YEAR 'ROUND

It isn't possible to spread lime all the time. When fields are wet or crops are growing your lime spreader trucks can be used for other profitable jobs if they are equipped with Flink Self-Feeding Spreaders. The Flink fits all dump trucks as a replacement end gate . . . truck can still be used for all trucking and hauling jobs, for road work, for sand and cinder spreading.

ONE MAN SPREADER

You can make money with your Flink-equipped trucks 365 days in the year! Spread more lime in less time when lime spreading can be done. Use your trucks to do 101 other jobs when you can't spread lime. The expense of having one purpose lime spreader trucks stand idle—which experienced operators estimate at $25 per day—is entirely avoided by men who use Flink Self-Feeding Spreaders, because Flink Spreaders do not interfere with the general use of the truck.

Strictly a one man outfit. The driver of the truck operates the spreader from the cab.

Spreads wet or dry materials, thick or thin as desired, up to 1" in size, 15' to 28' wide, depending on type of ground and nature of material.

Fits all standard 5½' and 6' dump bodies as a replacement end gate. Permits dumping of loads in usual way, or spreader can be removed in 5 minutes.

Write for complete literature.

509 Vermilion St., Streator, Illinois

The FLINK COMPANY

Elevator Buckets
All Types — All Sizes
Light and Heavy Steel Plate Construction
Hoppers — Chutes — Casings

HENDRICK MANUFACTURING CO.

47 Dundaff Street, Carbondale, Pa.

Branch Offices in Principal Cities—Consult Telephone Directory

Makers of Hendrick Perforated Metals, Hendrick Mitco Shur-Site Treads, Hendrick Mitco Armorgrids

SAVE SCREENING TIME — AND COSTS with HENDRICK PERFORATED PLATE!

Full clearance in Hendrick Perforated Plate prevents work stoppage through clogging Finer, lower-cost screening is assured — and product uniformity guaranteed, as uniform mesh is maintained for the life of the screen.

Hendrick Perforated Plate is supplied in any size and shape of opening — round, square, squaround, rectangular, hexagonal, slotted, oval and tapered — in a wide range of metals. For maximum service in screening abrasive materials, Hendrick High Carbon Heat Treated Steel is especially recommended.

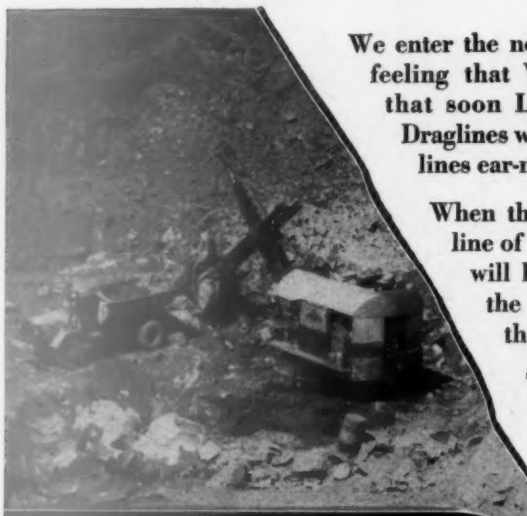
Welded for Strength & Service

WELLMAN *Williams* BUCKETS

Welded Rolled Steel construction builds longer life and greater utility into Wellman buckets. Multiple Rope and Power Arm types. Dragline. Power Wheel. Special Service Buckets. ⅜ to 16½ yd. capacity.

Send for Bulletin

THE WELLMAN ENGINEERING CO.
7014 Central Avenue • Cleveland 4, Ohio
Sales and Service Agencies in Principal Cities



We enter the new year with a profound feeling that Victory is not far away—that soon LIMA Shovels, Cranes and Draglines will be coming off the assembly lines ear-marked for peacetime operation.

When that time comes LIMA will have a line of Shovels, Cranes and Draglines that will be especially designed and built for the big jobs that you have planned for the future.

This war has provided a tough proving ground for excavators and material handling equipment. It has brought to the forefront the ruggedness and dependability of LIMA-MADE equipment, built to perform under extreme pressure.

As their wartime task continues, LIMA engineers continue to make improvements in design and construction that you may have, after Victory, the best shovels, cranes and draglines built.

After VICTORY

LIMA

Shovels-Cranes Draglines

LIMA LOCOMOTIVE WORKS, INCORPORATED
Shovel and Crane Division LIMA, OHIO, U. S. A.

A Type and Size FOR EVERY JOB

Model 5SF Semi-Trailer with 1 Cu. Yd. Rock Body

SEMI-TRAILER DUMP UNITS

WITH ROCK TYPE OPEN END OR STANDARD TAIL-GATE TYPE BODIES FOR ALL TYPES OF BULK MATERIAL HAULING ARE AVAILABLE FOR SALE TO APPROVED USERS. COMPLETE INFORMATION FURNISHED ON REQUEST.

ARMY E NAVY

TRUCK ENGINEERING CORPORATION
CLEVELAND 2, OHIO

ARMY E NAVY

BEFORE YOU BUY

. . . it will pay you to investigate the results obtained by the use of Honan-Crane Oil Purification Equipment.

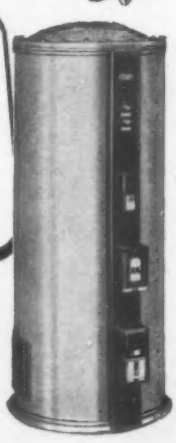
★ There are too many operators who are sour on Oil Purification . . . completely disappointed with the results they are getting with cheap and inadequate oil filters and strainers.

Honan-Crane "Continuous" Oil Purifiers are constantly replacing this inefficient equipment, but such costly experimentation is the long, hard way to get good results.

We believe that if any operator or prospective purchaser will first expose himself to the value of Honan-Crane Equipment in the terms of *results attained,* he will *buy* Honan-Crane and get the kind of Oil Purification every operator wants . . . THE CONTINUOUS REMOVAL OF ALL ABRASIVES, ACIDS, SLUDGES and DANGEROUS CONTAMINATION AS FAST AS IT IS LIBERATED BY THE OPERATING EQUIPMENT.

The cost of such effective purification is very small in relation to the savings accomplished in reduced wear and lowered maintenance costs.

Write for engineering bulletins and complete information on the purification of any kind of oil.



HONAN-CRANE CORPORATION

Subsidiary of Houdaille-Hershey Corp.

56 Indiana Avenue Lebanon, Indiana

Make wire rope last . . . keep it on the job

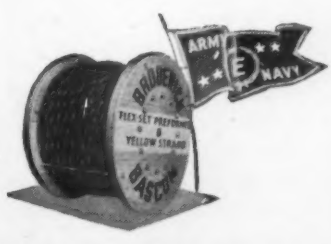
Sharing your wire rope with the armed forces doesn't mean going without; it just means taking *care* of what you have. For example, inspect it often. Lubricate when indicated. Operate at capacity, but don't overload.

When you must replace a rope, get *Preformed* Yellow Strand for heavy-duty quarry jobs. It's strong, flexible, highly resistant to kinking and fatigue—qualities that result in long rope life. Specify *Preformed* Yellow Strand for hoist and drag lines on your dragline machine . . . for holding and closing lines on clam shells . . . for hoist and swing lines and as rack and crowd ropes on power shovels. B & B engineers will gladly help you *choose* the right rope and *use* it right.

Broderick & Bascom Rope Co., St. Louis

Branches: New York, Chicago, Houston, Portland, Seattle

Factories: St. Louis, Seattle, Peoria



YELLOW STRAND

PREFORMED WIRE ROPE

Dumps Cleaner

HENDRIX *Lightweight*

features

1. 20% TO 40% LIGHTER THAN OTHER BUCKETS.
2. MANGANESE STEEL CHAINS, FITTINGS AND TOOTH-POINTS.
3. ALL-WELDED CONSTRUCTION—NO RIVETS TO WORK LOOSE.
4. FULL PAY LOAD EVERY TRIP, DRY OR WET DIGGING.

Speed up your operations, regardless of the digging conditions... move more materials faster... dump pay-loads cleaner by replacing old buckets with a HENDRIX Lightweight on your draglines.

Available in three types—light, medium and heavy duty—¾ to 20 cubic yards—with or without perforations. Write today for descriptive literature.

HENDRIX *Lightweight* **DRAGLINE BUCKETS**

DESOTO FOUNDRY, INC. · MANSFIELD, LOUISIANA

NEW LEADER Truck Body Type

LIME SPREADERS

Can Now Be Purchased Without Triple AAA Certificates or Priority

THE above picture shows a rear view of the new model NEW LEADER marl and lime spreader. This spreader is equipped with an extra wide conveyor and two distributor discs and is strictly a one-man spreader. You will be able to haul wet lime or marl and, due to the large opening in the back end of the spreader, material will always feed onto the distributor disc evenly.

This spreader has many outstanding features. Both gear boxes driving the distributor discs are equipped with cut steel gears and ball-bearings running in a dust-proof and oil-tight gear case. The large gear box driving the wide chain conveyor is equipped with a steel ring gear and pinion and a thrust bearing also running in a dust-proof and oil-tight gear case. Bearing hangers are placed underneath the distributor discs; these are also equipped with ball bearings. This helps to carry the weight of the distributor discs and the load, the weight not being suspended from the gears in the small gear box. With this arrangement you are assured longer lived gears. The framework of the spreader is of hardwood.

These spreaders can now be purchased without priority or certificates of any kind. Write us for any additional information, also prices.

Write today for latest catalog

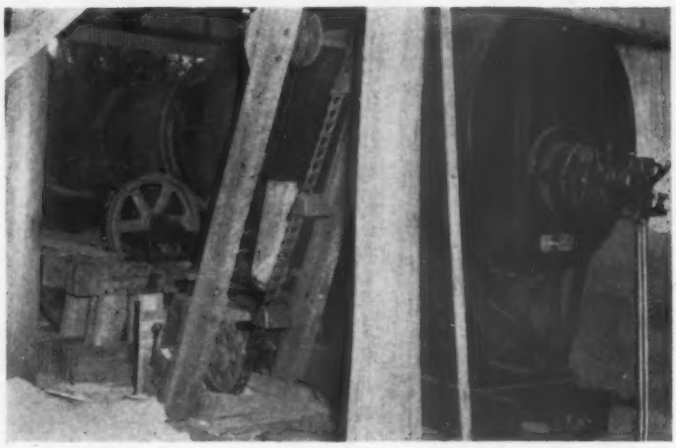
HIGHWAY EQUIPMENT COMPANY, INC.

Manufacturers of the World's Most Complete Line of Spreaders, Including Lime Spreaders, Sand and Cinder Spreaders, Chip Rock, Clay and Dirt Spreaders.

CEDAR RAPIDS, IOWA, U. S. A. **Phone 32017-32018**

RAY OIL BURNERS

for improving Calcium Kiln Firing



The Calcium Products Corp., Inc., Bunnell, Florida, operates a new plant which is processing coquina shell deposits to supply vital calcium elements in feeds and grits.

The 4' x 37' rotary kiln for drying the shell is direct-fired by a RAY Oil Burner. This modern-design unit develops maximum kiln efficiency through its great flame length and uniform intensity.

RAY Oil Burners are built for all types and capacities of kilns and dryers. Let RAY engineers help solve your problem.

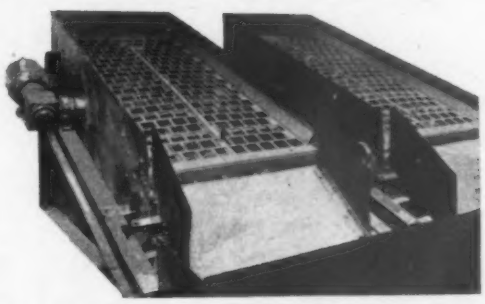
Write for Information and Address of Nearest Dealer

RAY OIL BURNER CO. 407 Bernal Ave., San Francisco 12, Calif.

Superior

Cross Perforated Steel Sheets and Plates

For War Production and Post-War Prosperity
Designed to fit VIBRATING, REVOLVING, AND SHAKING EQUIPMENT

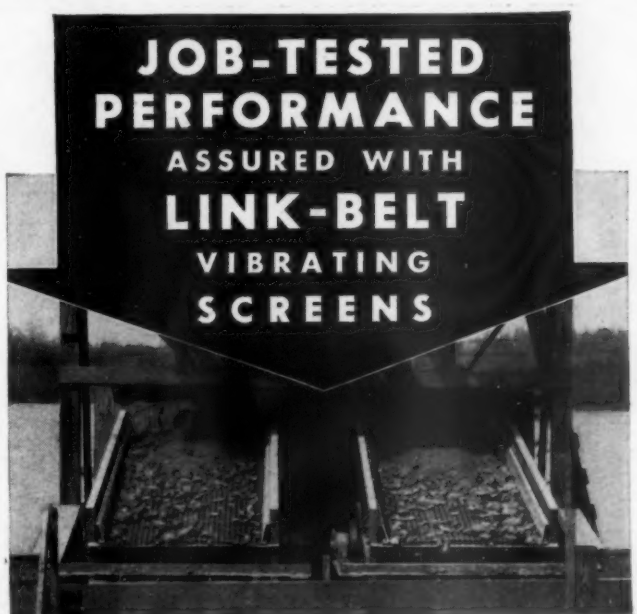


Combine ACCURATE SIZING and MAXIMUM PRODUCTION

Write for illustrative and descriptive literature.

Cross Service Agencies
Located in all Principal Cities

CROSS ENGINEERING COMPANY
Mfg. Plant and Offices
CARBONDALE, PENNSYLVANIA



● Whether the work calls for sizing, dewatering or recovering all kinds of wet or dry materials, you can depend on Link-Belt Screens to do the job. They are known for their high efficiency and low-cost operation, the result of over 20 years' experience in the design, manufacture and application of screens of all types. Made in a number of standard sizes—single or multiple decks, with or without enclosures, for light, heavy or extra-heavy duty. Complete data given in Books 1762 and 1977. Specify Link-Belt and be assured of "job-tested-performance."

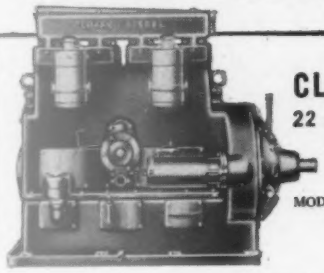
LINK-BELT COMPANY
2045 W. Hunting Park Ave., Philadelphia 40
300 W. Pershing Road, Chicago 9
Offices in Principal Cities

9749

LINK-BELT Vibrating SCREENS

Powerful, Compact, Safe, Lightweight
FOR MECHANICAL DRIVES

or Direct Connected to Generator in Climax 15 and 30 kva Generating Sets



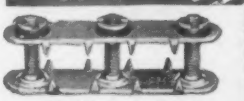
CLIMAX DIESELS
22 and 44 maximum h. p.
(at 1200 rpm)
2 and 4-cylinder

MODEL D297 CLIMAX DIESEL ENGINE
MAXIMUM RATING 44 H.P.

HERE IS more power—*more dependable, low cost power*—for stationary or portable industrial or marine service than is commonly available in a small, space-saving package. Climax Diesels are strongly built with one piece construction of cylinders and crankcase. They are 4-stroke-cycle type, solid injection, compression ignition engines that start instantly and operate smoothly on cheap, standard grade fuel oil. Standard equipment includes American Bosch fuel pump and injection nozzles, positive lubrication, cooling and electric starting equipment. For complete information and specification bulletin, write Climax Engineering Company, Clinton, Iowa.

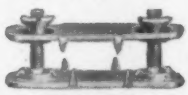
climax DIESEL
Builder of Climax BLUE STREAK ENGINES and GENERATING SETS
CLIMAX ENGINEERING COMPANY

Keep your conveyor belts going with
FLEXCO
HD BELT FASTENERS



• **FLEXCO H D RIP PLATES** are used in repairing rips and patching conveyor belts. The wide space between outer bolts gives the fastener a long grip on the edges of the rip, while the center bolt prevents the fasteners from bulging.

• Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco HD belt fasteners and rip plates. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.



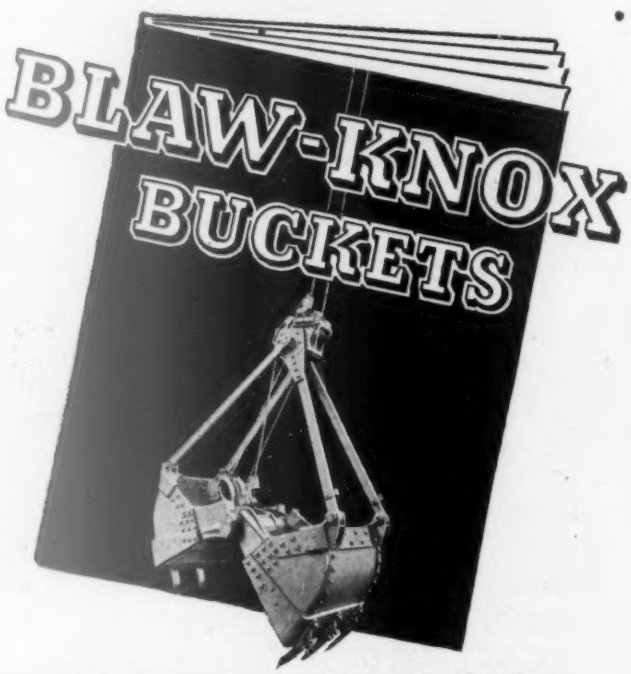
• **FLEXCO H D BELT FASTENERS** make a strong, tight butt joint with long life. Recessed plates embed in belt, compress belt ends and prevent ply separation. Six sizes in steel and alloys.

Bulletin F-100 shows exactly how to make tight butt joints in conveyor belts with Flexco HD Belt Fasteners. Also illustrates step by step the latest practice in repairing rips and putting in patches.

Write for your copy

FLEXIBLE STEEL LACING COMPANY
4623 Lexington St., Chicago

FLEXCO HD BELT FASTENERS
Sold by supply houses everywhere



Write Headquarters for the Catalog You Need

No. 1586—Blaw-Knox Concrete Buckets.

No. 1606—Blaw-Knox Buckets for Contractors.

No. 1696—Blaw-Knox Buckets for Single Drum Hoists for use on Railroads. Mills, Foundries, Etc.

No. 1745—Blaw-Knox Buckets for "Burtoning" handling Nitrates, Grain, Potash, Etc.

No. 1757—Blaw-Knox 2 Line Lever Arm Buckets for Rehandling, Barge Cleanup, General Purpose, Hard Digging, Dredging.

No. 1865—Blaw-Knox 4 Rope Buckets for Coal, Ore and Cleanup.

BLAW-KNOX DIVISION of Blaw-Knox Company
2004 Farmers' Bank Bldg., Pittsburgh, Pa.

"TAILORED-TO-THE-JOB"
SAND AND GRAVEL WASHING PLANTS

"Built and equipped by COLUMBUS"

. . . explains the "success story" of many modern plants like the above Ohio operation.

This is a typical example of COLUMBUS care and efficiency. COLUMBUS engineers supervised the layout and construction work, and furnished all the elevating and conveying machinery.

COLUMBUS-designed plants—or single machines—combine top working ability and economy. Write for Catalog.

THE COLUMBUS CONVEYOR CO.
COLUMBUS • Ohio

Can You Use SAVINGS?

Davenport Locomotives are Available in Steam Gasoline Diesel with Electric or Mechanical Drive

Reductions in operating costs will be mighty welcome during the competitive post-war years. If rail haulage is a part of your set-up, you will find Davenport Locomotives a major source of profit-increasing economies.

Take the case of Mr. V. O. Johnston, President of the Lincoln Sand & Gravel Co. He reports a savings of better than $25.00 per eight-hour day from his 44-ton Davenport Diesel-Electric as compared with steam operation.

Now is the time to marshal the facts about modern haulage "The Davenport Way." Our engineers will welcome a description of your haulage conditions and will gladly submit reliable recommendations—all without obligation.

ARMY NAVY

EXPORT OFFICE • **BROWN & SITES** • 50 Church St., New York Cable Add. "BROSITES"

DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

Baughman's New "Model C" Cinder, Chip or Lime Spreader

This Spreader is easily attached to any dump truck in a few minutes. Distributors always remain level — or can be tipped to any angle. **Spread remains near the ground.**

Price $135.00 Complete, F. O. B. Jerseyville.
Net Weight, 175 Pounds.

Manufacturers of the famous "Hi-Speed" line of Self-Unloading Equipment.

Model E, Belt Conveyor Type
Model D, Chain Conveyor Type
Model H, Wide Chain Type
Model F, Flat Bed Type
Model C, Cinder and Chip Spreader
Model J, Transfer Type
Model L, Car Unloader
Model M, Car Unloader

Ask for recommendations—we have a reliable distributor near you.

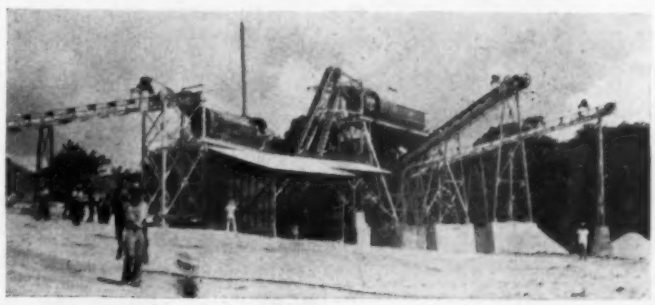
BAUGHMAN MANUFACTURING CO., Inc.
Factories • Jerseyville, Illinois

PRIORITIES WERE NEVER NEEDED FOR OUR EQUIPMENT!

Advertise your wants and surplus equipment in

PIT AND QUARRY

Don't Experiment in a Quarry!



This job takes RELIANCE EQUIPMENT

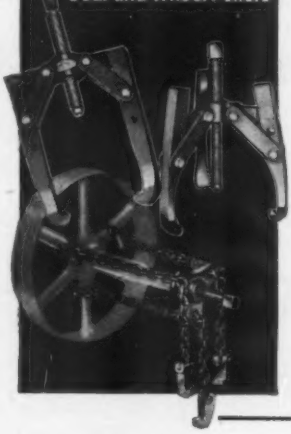
Rely on RELIANCE for Rock Crushers, Bucket Elevators, Revolving Screens, Wash Boxes, Feeders, Belt Conveyors, Air Separators, Hoists, Drag Lines, and other material handling equipment.

Write for Bulletin

Large-scale, profitable crushed rock production requires the right *tools* throughout — n o t h i n g "almost as good" will do!
That's why a fast-growing list of successful installations — l i k e the above — are RELIANCE-Equipped "from top to toe!"

UNIVERSAL ROAD MACHINERY CO.
KINGSTON, NEW YORK
Distributors in all principal cities of the U. S. A.

ARMSTRONG-BRAY
Gear and Wheel Pullers



Prompt Shipments from Stock

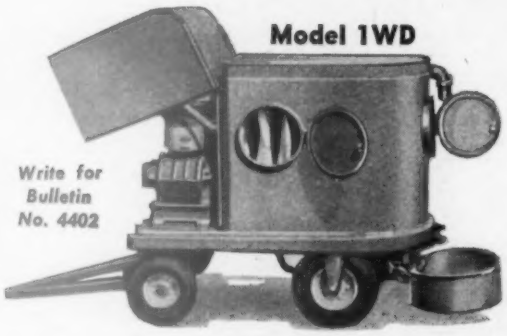
STEELGRIP Standard Rigid Arm Gear and Wheel Pullers are of improved design. Will not slip from work. Arms are forged and heat-treated. 2-arm, 3-arm and special models. 12 types and sizes. CHAINGRIP Universal Pullers pull wheels, solid gears, pinions, etc., even at considerable distance from end of shaft. Proof-tested chains have both chain hooks and special pulley hooks, 3-ton and 12-ton capacities.

Write for Catalog Sheets

Armstrong-Bray & Co.
"The Belt Lacing People"
5386 Northwest Highway, Chicago 30 U. S. A.

25 to 33 PERCENT *FASTER* DRILLING

MARKLEY-CARTER
PORTABLE DUST COLLECTOR
"Collects and Controls"



Model 1WD

Write for Bulletin No. 4402

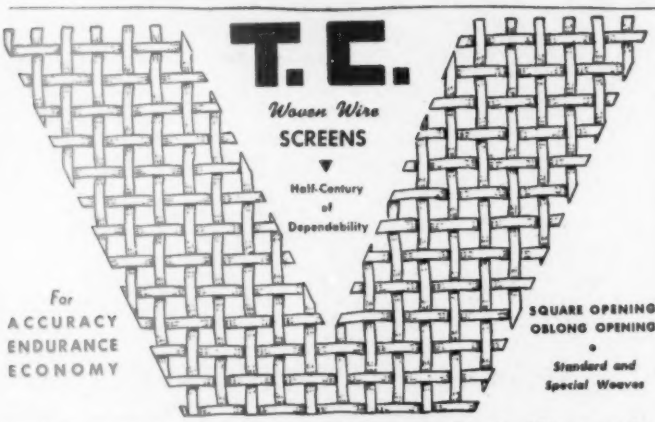
It's defeat day for dangerous and costly dusts on your rock drilling jobs.

This modern protective method

- Reduces silicosis hazard to safe hygienic limits
- Increases drilling speed up to 33%
- Reduces sharpening expense
- Reduces drillsteel wear
- Eliminates wet drilling

Keeps plant, motors, and machinery clean and free from harmful dusts.

RALPH B. CARTER COMPANY
192 ATLANTIC ST., HACKENSACK, N. J. 53 PARK PL., N. Y. 7, N. Y.



T.C.
Woven Wire SCREENS
Half-Century of Dependability

For ACCURACY ENDURANCE ECONOMY

SQUARE OPENING
OBLONG OPENING
Standard and Special Weaves

TWIN CITY IRON & WIRE CO., St. Paul, Minnesota

UNIVERSAL SCREENS

Two-Deck Model 42" x 96", Motor & V-rope Dr.

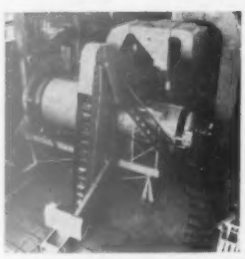
GUARANTEED to give you best results on your most difficult separations.

RUGGED - SIMPLE Construction. LOWEST in FIRST cost and MAINTENANCE cost.

Catalog No. 107,—32 pages on Screens and Screening is yours for the asking.

UNIVERSAL VIBRATING SCREEN CO.
RACINE ~ ~ WISCONSIN

SIMPLICITY
ASPHALT PLANTS and INDUSTRIAL DRYERS



combine the best in

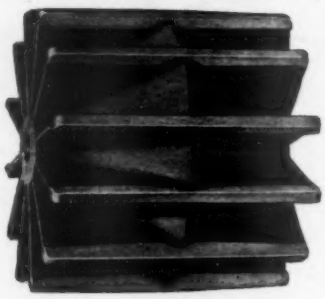
DESIGN
MATERIALS
WORKMANSHIP
CAPACITY
PORTABILITY
ECONOMY

to insure complete

DEPENDABILITY

Write for Bulletin.
THE SIMPLICITY SYSTEM CO.
Chattanooga, Tennessee

THOUSANDS OF USERS TESTIFY

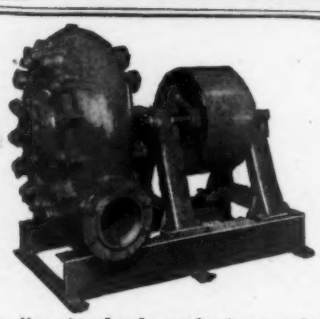


that the **Belt-Saver Pulley** saves money and rubber and prevents accidents on their belt conveyors and bucket elevators.

Write for more information!

SPROUT, WALDRON & COMPANY
136 Sherman Street Muncy, Pa.

The Lightning
Sand and Gravel Pumps
HEAVY-DUTY
(Ball-Bearing)
and Low Head Types



Complete stock of replacement parts, elbows and fittings carried for prompt shipment.

Replacement parts made to jig standards and always fit and always available.
For 30 years LIGHTNING pumps have faithfully performed the work they are intended for. We manufacture a type and size to fit the need. Simplicity of design and ease of handling have made these pumps one of the most popular. Write for catalog now.

Mfg. by
KANSAS CITY HAY PRESS CO., KANSAS CITY, MO.

NAT-ALOY WIRE CLOTH

☒ VOTE **"YES"**

For this dependable, non-crystallizing, long-wearing Screen Cloth with "Nat-Aloy" Lock Crimp Meshes.

"IT'S THE PEOPLE'S CHOICE"
among profit-wise producers for precision separation and economical operation.

Stock shipments in all widths and all meshes. . . .
Write for catalog No. 55.

NATIONAL WIRE CLOTH CO., Inc.
252-270 W. FAIRFIELD AVE. — ST. PAUL, MINN.

SCREEN SERVICE!

RUGGED, DURABLE AND ACCURATE
ALL METALS ALL WEAVES

FOR ANY INDUSTRIAL APPLICATION

THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 78TH STREET CLEVELAND, OHIO

EAGLE Rockbreaking PACEMAKERS for 1945

CRUSHERS

EAGLE

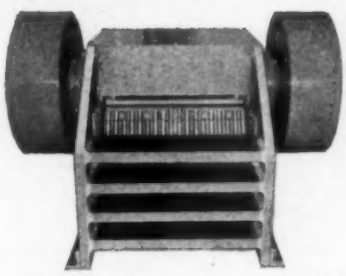
JAW CRUSHERS
IMPACT BREAKERS
PULVERIZERS
CONVEYORS
LOADERS

Crushed stone producers who use EAGLE Crushers will be able to set peak production records in this critical year.

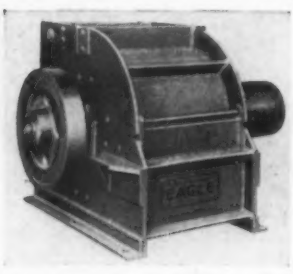
"EAGLES" are pacemakers of production because they combine great durability with low power and maintenance costs, and continuous high capacity output.

Territory open for responsible distributors.

Write for Bulletins



EAGLE Jaw Crusher. Capacities to 1200 tons per day.



EAGLE Impact Breaker and Pulverizer. THE machine for agstone.

EAGLE CRUSHER CO., INC., Galion, Ohio

STERLING BABBITT
For Crusher Bearings

Bronze Inner and Outer Eccentric Bushings

Countershaft Bushings
Socket Liners

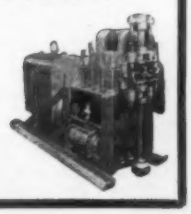
ZINC SPELTER

THOS. F. SEITZINGER'S SONS
P. O. Box 1336 ATLANTA 1, GA.

DIAMOND CORE DRILLING
CONTRACTORS

Fire Clays, Coal, Limestone
Gravel Deposits, All Minerals

MOTT
CORE DRILLING CO.
HUNTINGTON, W. VA.



GOOD USED EQUIPMENT

Fairbanks, Morse 150 ton RR Track Scale
9' Clearfield Foundry Wet Pan
86" Sturtevant Exhaust Blower, belt drive
National, 10-ton, Single Drum Winch, Arranged for Direct Motor Drive, without motor
200 HP Westinghouse Slip Ring Induction Motor, with starter, 3/60/440 —1160 RPM'S
60 HP Westinghouse Type SK, 230 volt DC, 680 RPM Motor
Caldwell Car Puller, arranged for Direct Motor Drive, without motor

IRA C. JORDAN
2508 E. Belleview Place
Milwaukee 11, Wisconsin

Locomotives, 6 to 120 Tons, 24", 36", 42" and Standard Gauge
Locomotive Cranes, 10 to 40 Ton capacity, Steam, Gas, Diesel, Electric
Crawler Cranes & Shovels, ⅜ to 10 yd. Steam, Gas, Diesel, Electric
Truck Cranes, 5 to 10 Ton capacities
Overhead Cranes, 3 to 50 Ton capacities, various types and spans
Tractors, crawler type, 20 to 96 HP Gas, Diesel. Also attachments
Clamshell Buckets ⅜ to 4 yd.
Railroad cars and tracks, narrow and Standard Gauge
210 HP Diesel Motor
25,000 Gal. Steel Tanks
48 KW Generator AC Diesel Power
Bins, portable and stationary with and without Scales and Batches. Also cement bins.
Derricks, 5 to 75 Ton capacity

"STONE — the CRANE MAN"
502 Insurance Exchange Building
Detroit 1, Michigan
PHONES: RAndolph 6156-4065

Have surplus stock Sauerman Bros. Single Sheave Blocks with and without bushing. Sell cheap. Write for details.

MAHONEY-CLARKE, INC.
217 Pearl St., New York 7, N. Y.
WHitehall 3-0760

Austin Gyratory Crusher No. 107.
Buchanan Type B 12" x 36" Jaw Crusher.
Allis-Chalmers Double Roll Crusher, Garfield Type, size 54" x 20", with new manganese roll shells.
Allis-Chalmers Double Roll Crusher, Type XX, size 54" x 24", with new tire steel shells.
Lippman Scrubber Screen, 72" x 18', complete with G. E. 20 HP motor, 440 volt with starter.
Tyler Type 31 Tandem Hummer Screen, 8' x 5' surface with G. E. Type G2 Motor Generator Set.
Marion Type 450 Electric Shovel, crawler mounted, 22' boom, 1¼ yard bucket, equipped for 440 volt current.

• • •

AMERICAN ZINC COMPANY OF TENNESSEE

Paul Brown Bldg., St. Louis 1, Mo.

STANHOPE OFFERS!

AIR COMPRESSORS
BELTED: 355, 528, 676, 1000, 1300 & 1570 Ft.
ELECTRIC: 478, 676, 807, 1302, 1722 & 2850 Ft.
DIESEL: 105, 315, 420, 603, 807 & 1000 Ft.
PORTABLE GAS: 110, 160, 220, 310, 540 & 1300 Ft.
STEAM: 49, 310, 528, 1300 & 2200 Ft.

GRAPPLES & BUCKETS
50 Skips and Battleship Type, 2 to 6 Yds.
5 Owen & Bucyrus Rock Grabs.
CLAMSHELL: ½, ¾, 1, 1½ & 2 Yds.
ORANGE PEEL: ¾, 1, 1½, 2 & 3 Yds.
DRAGLINE: ½, ¾, 1, 1½ & 2 Yds. Cap.

CRANES & DRAGLINES
5 Ton BROWNHOIST, 30 Ft. Boom Gas.
12 Ton NORTHWEST 50 Ft. Boom Gas.
12 Ton KOEHRING 45 Ft. Boom Gas.
16 Ton Speedcrane, Gas, 50 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Locomotive.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
2 Yd. Monighan Electric 60 ft. Boom Dragline.
3 Yd. Monighan Diesel Dragline.
5 Yd. Monighan Diesel Dragline.

CATERPILLAR SHOVELS
½ Yd. P. & H. Gas & ¾ Yd. Insley Gas.
¾ Yd. KOEHRING Gasoline.
¾ Yd., 1¼ Yd., 2 Yd., 4 Yd. & 8 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas & 7/8B2 Steamer.
1½ Yd. BUCYRUS 41B Steamer.
1½ Yd. Lima 750 Diesel.
1½ Yd. KOEHRING 601—Gas.

DUMP CARS
46—KOPPEL, 1½ Yd., 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd. 36 In. Ga.
20—Sd. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

BALL, ROD AND TUBE MILLS
6x8 Continuous Pebble Mill.
5x5 Batch Mill.
5'x22" HARDINGE CONICAL Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
4x8, 8x6, & 10x9 Straight Ball Mills.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x16, 5x18, 5x22, & 6x22 Tube Mills.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 5x12 and 6x12 ROD MILLS.
4x16 Smidth Tube Mill Silex.
5½x20 Smidth Tube Mill Mang. Lining.
5½x18 P & M Tube Mill Silex.

PULVERIZERS
No. 1 Sturtevant Ring Roll.
RAYMOND Auto, Pulverizer No. 0000, 0 & 3.
RAYMOND Imp Mills No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 Ft. Chaser Mill.

SEPARATORS AND COLLECTORS
14 ft., 8 ft. and 12 ft. Separators

ROLL CRUSHERS
36x60 Fairmont Single Roll.
36x20 Diamond Double Roll.
24x24 & 36x16 & 36x20 Diamond Double Roll.

JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 20x11, 26x12, 30x15, 30x13, 36x30, 36x18, 36x14, 36x15, 36x9, 36x6, 38x18, 36x10, 36x24, 42x9, 48x36, 60x42, 84x66, 36x16, 9x36.
30x10 Gruendler Roller Bearing.

CONE & GYRATORY CRUSHERS
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
21K & 18N Allis Chalmers.
4—10 TZ Traylor 4 Ft. Gyratory.
4—Nos. 5, 3 & 6 Austins Gyratory.
2—Traylor T-12 Bulldog Gyratory.
8 in. Traylor T, Gyratory, Telsmith No. 9.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.
KENNEDY: Nos. 19, 25, 27, 39 & 49.
16" Traylor.
7 Ft., 5 Ft., 4 Ft., 3 Ft. and 2 Ft. Symons Cone.

MIXERS—PAVERS
5—1 yd. 2 yd. & 3 yd. Mixers.
3—Ransome & Rex 34E Dual Drum.
5—Koehring & Smith 27E Pavers.

HOISTING ENGINES
7 Gasoline 15, 40, 60 & 100 H.P.
17 Steam 7x10, 8¼x10 and 10x12.
8 Electric 20, 35, 50, 60, 100 & 150 H.P.

HAMMER MILLS
4 Jeffreys: 24x18-A, 36x24-B, 42x36-E & 42x48-B.
Williams No. 1 Jumbo Jr., & No. 6 Universal.
Nos. 4, 6 & 8 Williams Jumbo.
No. 36 Am. Ring Roll.
Greundler No. 6X.

ASPHALT EQUIPMENT
7—750 & 1000 Gal. Distributor Trucks.
3—1000 Lb. & 2000 Lb. Pug Mixers.
6—3, 5, & 10 Ton Asphalt Rollers.
5—½, 1, & 2 Ton Asphalt Plants.

DIESEL ENGINES
60 HP Fairbanks Morse.
140 HP Fairbanks Morse.
200 HP Atlas.
225 HP Chicago Pneumatic

DIESEL GENERATORS
343 K.W. F.M. 3/60/480 v.
240 K.W. F.M. 3/60/2300 v.
300 K.W. Worthington 3/60/2400 v.
125 K.W. F.M. 250 v. D.C.
30 K.W. Buda 110 v.

RAYMOND MILL
5 Roll High Side.

CONVEYOR PARTS
BELT: 1000 Ft. 60 In., 700 Ft. 42 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 1000 Ft. 14 In. & 16 In.
IDLERS: 36 In., 30 In., 24 In., 20 In., 18 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.

ROTARY DRYERS AND KILNS
36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 16 Ft., 5 Ft. x 60 Ft., 6 Ft. x 60 Ft., 6 Ft. x 70 Ft., 70 In. x 40 Ft., 5x30 & 8x84 Double Shell Dryers, 8x110, 7½x100, 8x125 & 10x20 Kilns.

STEEL DERRICKS
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

LOCOMOTIVES
DIESEL: 7—4½, 8 and 15 Ton 36 x42 In. Ga.
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

SCREENS
VIBRATING: 2x4, 3x6, 2x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72. HUMMER, ROTEX, NIAGARA & ROBINS, LINK BELT & HURON.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

STEEL STORAGE TANKS
35—4000, 5000, 6000, 8000, 10000, 15000 and 20000 gal. cap. Horizontal and Vertical.
6—2500, 5000 and 10000 bbl. Vertical.

ASPHALT TANKS
15—8000, 10000 and 20000 gal. cap. with heater coils.

RAILROAD CARS
20—8000 gal. cap. Tank Cars.
12—50 Ton Cap. Battleship Gondolas.
7—50 Ton Cap. Flat Cars.

SAUERMAN DRAG AND SLACKLINES
1— ¾ yd. Gas 1—1½ yd. Electric
1—1 yd. Electric 3—2 yd. 3 yd. & 4 yd. Electric

R. R. TRACK SCALE
125 Ton 56' x 10'6" Platform 4 Section.

WHIRLEY CRANES
5 Clyde 75 to 100 Ft. Boom.

DRILL SHARPENERS
5 I.R. 4K Shank Grinders.
6 Ingersoll-Rand 54, 40, 50 & 34's.
7 Sullivan Class A. & C.
8 Gardner-Denver 3A & No. 6DS.

MINE LOADERS
5 Eimco, GD, & Conway.

(Cable Address: "STANEQUIP" New York)
Lincoln Bldg., 60 E. 42nd St., New York, N. Y.
Murray Hill 2-3075 or 2-3076

R. C. STANHOPE, INC.

LOCOMOTIVES
SHOVELS CRANES
CARS

1—42½ ton Porter 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, entire new firebox, rebuilt.
1—26 ton American 0-4-0 saddle tank locomotive, standard gauge, A.S.M.E. boiler, thoroughly overhauled.
1—72½ ton Baldwin 0-6-0 separate tender switcher, full time I.I.C. papers, overhauled.
1—Whitcomb diesel locomotive, 36" gauge, with Caterpillar V-8 engine, air brakes, electric lights. This locomotive built in 1936 and has now been put in first class serviceable condition with new wheels, chains, sprockets, reversing gear, and bronze clutch plates. Weight is 20 tons in full working order.
5—Western 30 yard two way air operated side dump cars, standard gauge, **DROP DOOR TYPE**, first class condition.

BIRMINGHAM RAIL & LOCOMOTIVE COMPANY
Birmingham 1, Alabama

EQUIPMENT FOR SALE

3—Duplicate **VULCAN** 21 ton, 36" Ga. steam saddle tank locomotives, Cy. 11"x16"—Nat'l Board boilers. blt. 1923
1—45 ton **BALDWIN** 2-6-2 Prairie type, std. ga. loco. & tender.
1—56 ton **BALDWIN** 0-6-0 std. ga. switcher type with separate tender. 19"x24" cy.
10—36" ga. **WESTERN** 5 yd. dump cars.
10—Std. ga. **WESTERN** 12 yard dump cars, all steel, hand dumps.
1—**BROWNING** No. 3 steam loco. crane, 30 ton capacity, 60' boom.
2—Model 25A **KALAMAZOO** motor section cars, 4 cy. gasoline motor.
3—Model 119-L **BUDA** motor section cars, Buda air cooled motor.
1—**BLAW-KNOX** 1½ yd. clam shell.

Send us your inquiries for rebuilt equipment.

SOUTHERN IRON & EQUIPMENT CO.
Plant & Gen. Offices
Atlanta 2, Ga.

---

4 OFFICES and PLANTS
CHICAGO 11588 S. Wentworth Ave. | NEW YORK 30 Church St., Dept. EXE
PITTSBURGH P. O. Box 8783, Dept. EXE | PHILADELPHIA 1500 Race St.

EQUIPMENT CORPORATION of AMERICA

WE SERVE 4 WAYS
BUY | REBUILD
SELL | RENT
4

1—Buda Power Unit, 50 H.P. Model YRA
1—Simplicity 3' x 8', three (3) deck Vibrating Screen
1—OK Single Drum Hoist, 35 H.P. Waukesha Engine
1—1500 Watt Kohler Portable Gasoline Lighting Plant
1—2500 Watt Universal Portable gas engine lighting plant
2—¾ cu. yd. Owen Type K Clamshell buckets
2—1 cu. yd. Owen Type M Clamshell buckets
2—9" x 16" Cedar Rapids Jaw Crushers
1—8" x 24" Universal Jaw Crusher, portable with bucket elevator
1—10" x 20" Allis Chalmers Blake type Jaw crusher
1—Shovel front for 10-B Bucyrus Erie
1—Ingersoll-Rand 160 compressor, 2 stage, Waukesha engine, on four (4) pneumatic tires
1—5 Ton, 3 Wheel Good Roads Gasoline Roller
1—Model 42B Barber-Greene bucket loader
1—2 ½ cu. yd. Hayward Class G. clamshell bucket
1—4 cu. yd. Hayward Class G Clamshell bucket
1—2 drum Sauerman Hoist with Hercules Gas Engine

YATES MACHINE WORKS
115 Main Street, Rochester, Michigan

For Sale. Location New England.

18x36 New England jaw crusher with motor.
10x16 Reliance lever arm crusher.
10" Kennedy gearless crusher, with motor & belt.
4x10 Kennedy vibr. screen, single D., with motor.
18"x100' belt conveyor, with motor & drive.
30"x85' belt conveyor, with motor & drive.
24"x65' bucket elevator, with motor & drive.
Erie aggremeter 105 ton, 3 comp., with new scales.
Blaw-Knox weigh bin, 3 comp., 101 ton.
4—Transit mixers, 3½—4 yd., without trucks.
Telsmith sand & gravel plant, consisting of plate feeder 18" conveyor belt, 65' centers, sand washer (42" paddle type), 10x20 Telsmith crusher, 18" belt conveyor for return belt, Ingersoll-Rand electric water pump; all the above equipment with belts, motor and drives for 220 volt 3 ph. current. Also one 24x36 scrubbing screen. Price $2875.00. Subject to prior sale.

ROAD & RAILROAD SUPPLY CO.
475 FIFTH AVE., NEW YORK 17, N. Y.

For Sale: 100 Tons New ¼ In.

Armor PLATE

Write for Prices & Sizes

Box 1125, Pit & Quarry
538 So. Clark **Chicago 5, Ill.**

FOR SALE

1—24 x 50 Champion Jaw Crusher (reinforced). Complete with 100 horsepower General Electric slip-ring motor, complete with starting controls and drive belt, also to fit this unit 40 in. x 10 ft. plate feeder with drive belt, clutch and 20 horsepower motor.

1—42" x 50' conveyor, complete with 10 horsepower motor, drive belt and 42"—11 ply conveyor belt.

This unit can be seen in operation at present time, priced right for quick sale.

Al. C. Petters Company
St. Cloud, Minnesota

FOR SALE
COMPLETE LIME PLANT
Includes Clyde-Raymond Hydrator, 6 Steel Shaft Kilns, Lime and Stone Crushers. Well and Wagon Drill. Tools and Other Equipment.
Stency & Wilton Company
Wrightsville, Pennsylvania

SHOVELS—CRANES
Bucyrus-Erie 75B elec. shovel and dragline 2½ yd.
Bucyrus-Erie 50B dragline, Diesel
Marion 371, 1¾ yd. Shovel, Crane, Dragline
Bucyrus-Erie 42B Steam shovel-crane
P & H 650 shovel-crane
Bucyrus-Erie 20B 1 yd. electric tunnel shovel
Koehring 301 Shovel & Crane, ¾ yd.
Northwest No. 3 Crane, Shovel & Backhoe
Northwest No. 6 Shovel, Crane, Dragline
Browning 10 ton Truck Crane
P & H 208A, 8 ton Truck Crane
Byers Bearcat ½ revolving Crane, 5 tons cap.

SPECIALS!!
Ingersoll-Rand Model 50 Drill Sharpener
Allis-Chalmers cent. pump, electric, 3500 GPM, 50'
Worthington 8" cent. bronze impeller, elec. Pump
Rotary Screen 4'x18' with Bucket Elevator 40'

BUCKETS—STONE SKIPS
⅞ yd. Blaw-Knox Clamshell, digging
⅞ yd. Hayward Clamshell, digging
Hayward ¾ yd. Standard Orange Peel
⅝ yd. Williams Clamshell, digging
⅝ yd. Haiss Clamshell, digging
½ yard Haiss Clamshell, rehandling
¾ yard Haiss Clamshell, rehandling
Erie ¾ yd. Clamshell, rehandling
20—2½ to 3 yd. Battleship type Steel Stone Skips

TRACTORS—BULLDOZERS
D7 caterpillar tractor with bulldozer
Cat. D4 tractor with angledozer
Allis-Chalmers HD10 with bulldozer
Int. TD35 with bulldozer
Int. TD14 with bulldozer, rebuilt

CRUSHERS—CRUSHER PLANTS
Gyratory Crushers: K.V.S. 30, 49; Traylor 8", 10", 12", 14", McCully 13", 8", 6".
Jaw: 10x22, 10x24, 10x30, 11x18, 11x21, 12x22, 12x24, 14x24, 14x25, 15x32, 16x32, 16x38

LOCOMOTIVES—CARS
American 60 ton, steam, std. ga.
American 45 ton, Saddle Tank
Plymouth 35 ton, std. gauge gas
Plymouth 30 ton standard gauge Saddle Tank
Baldwin 20 ton, 36" gauge, Saddle Tank
Vulcan 30 ton Steam, Saddle Tank
Whitcomb 14 ton, Diesel, 36" gauge
Porter 13 ton, Steam Saddle Tank, 36" gauge
Baldwin Westinghouse 8 ton, 36" ga. Battery
Vulcan 6 ton, 36" gauge, gas
3—Western Steel 20 yard Air Dump Cars
3—30 ton Standard Gauge Flat Cars, rebuilt

CONCRETE PLANT & EQUIPMENT
2—Ransome 28S Mixers on skids, left and right hand
Koehring 34E Dual Drum Power
Fuller Kinyon Bulk cement unloader
Pauers—27E—2 Koehring, 1 Multi-Foote 1 Rex
Rex Pumperete Models 160, 180, 190 and 200
Finishing machines from 10' up to 32 ft.

RICHARD P. WALSH COMPANY
30 Church St. **New York, N. Y.**

ELECTRIC BULLDOZER
Caterpillar D4 equipped with LaPlante-Choate hydraulic controlled bulldozer powered by electric motor 220/440 volt. Suitable for underground work such as coal mines, tunnels, quarries, etc. Also

DAVEY AIR COMPRESSOR
210 c. p. m., powered by Franklin Air Cooled Gasoline Engine, unit portable mounted, 4 wheels with tongue, almost new. Price $1500. We have tractors, bull and angle dozers, Dig-N-Carry Scrapers at far below ceiling prices.
Overton C. Evans — Mt. Sterling, Kentucky

FOR SALE

Modern grinding mill plant for feldspar, talc or lime, well located in New York State. Hardinge equipped. Complete, ready to operate. Will sacrifice to responsible buyer.

• • •

H. C. WILDER
315 Syracuse Building
Syracuse 2, New York

PRICED RIGHT

1—Fuller Kinyon Type C Portable Transport Pump for unloading dry pulverized materials from box cars, bins, etc., 12 to 15 ton per hour, motor driven.
1—Vulcan 6'x42' Rotary Dryer, ½" shell, located West Coast.
1—Vulcan 6'x60' Rotary Kiln and 4'x35' Rotary Cooler.
1—Set of 18"x10" Crushing Rolls.
1—Blake Jaw Crusher, 9"x14".
3—Oliver Rotary Continuous Filter, 6'x6', 5'x8', 3'x4'.
2—Bucket Elevators, 20' to 75'.
8—Belt Conveyors, 20' to 50'.
5—Tyler Screens, 3'x5', 4'x5'.
1—Jeffrey Hammer Mill 24"x18".

Partial List Only

WANTED: Crushers, Dryers, Pulverizer, etc. Send us your list.

BRILL Equipment Co.
225 WEST 34th STREET, NEW YORK 1, N.Y.

MUST SELL AT ONCE

P&H 600 crawler gas combination shovel, crane and dragline, boom 50', shovel dipper 1 yard.
20-B Bucyrus crawler gas crane, 40' boom, double drums, steel cab, ¾ yard capacity.
3—Barber-Greene Model 42 crawler gas disc type bucket loaders, capacity 1¾ yards per minute.
3 ton Austin Pup gas roller.
110 HP Kewanee heating boiler.
All the above overhauled by our men. First class condition, ready for work.

THE ACME EQUIPMENT COMPANY
14057 Schaefer Highway
Detroit 27, Michigan

½-Yard Gas Shovel

¾ swing, Type C, Insley. 17' boom, 12'6 dipper stick. Also skimmer attachment. Rebuilt — very low price.

• • •

The Industrial Equipment Corp.
P. O. Box 1647, Pittsburgh 30, Pa.
Warehouse: Carnegie, Pa.

---

36 x 42" Traylor Jaw Crusher, with motor.
24 x 36" Farrel Jaw Crusher.
14 x 36" Cedar Rapids Jaw Crusher
Allis Chalmers No. 6, 7½. 8L Gyratory Crushers.
Kennedy 38-S Gyratory Crusher.
Austin No. 107 Gyratory Crusher.
18 x 24" McLanahan Single roll Crusher.
36 x 60" Fairmount single roll Crusher.
2, 3 & 4' Symons Cone Crushers.
Williams 4 roll Mill.
Barber Greene Bucket Loaders 42-62.
1½ & 2 yard Brooks Load Luggers.
Belt Conveyors 14" x 40', 14" x 190'.
½ yard Bay City Gas Crawler Crane-Dragline.
2 yard Page Walker Dragline 60' boom, Diesel.
Diesel, Natural Gas, Steam Engines.
Locomotives, Cars, Compressors, etc.

MID-CONTINENT EQUIPMENT COMPANY
710 Eastgate Pa. 2290 **St. Louis 5, Mo.**

AC DIESEL ENGINE GENERATOR SETS
3—75 KW. Caterpillar, D-13000, must be sold together, received 1942.
3—Fairbanks, 250, 240 and 148 KW. In operation. Also many others.

STEPHEN A. DOUGLASS CO.
630 Fort Washington Ave.,
New York 33, N. Y.

FOR IMMEDIATE SHIPMENT

SYMONS CONE CRUSHERS
1—3′ with coarse bowl.
1—5½′ with coarse bowl.

PRIMARY GYRATORY CRUSHERS
2—Allis-Chalmers Superior McCully, 30″ and 42″ feed openings.

CRUSHING ROLLS
1—24″x40″ Pennsylvania, single roll.
2—18″x18″ Jeffrey, single roll.
2—40″x16″ double roll, smooth shells.

RAYMOND PULVERIZERS
2—4 roll High Side, complete, for extremely fine products.
1—4 roll High Side, equipped with whizzer separator and latest oil type journals.

DIRECT HEAT ROTARY DRYERS
1—4′x30′ Ruggles-Coles single shell. Can also be used as Rotary Kilns.
2—5′x40′.
1—5′x30′ Cummer, mounted on steel I-beam frame, with furnace, etc.
2—6′x30′ Ruggles-Coles, double shell.
1—6′x60′ Allis-Chalmers "Ebro" type, single shell.

HARDINGE CONICAL BALL AND PEBBLE MILLS
1—4′6″x16″ iron lined.
1—5′x22″ iron lined, silent chain drive.
1—6′x36″ silex lined, silent chain drive and motor.
2—8′x30″ silex lined, belt driven.

STEEL GRINDING BALLS
25 Tons, mixed, 2″ and 3″ Steel Balls.

DORR CLASSIFIERS
2—Dorr Combination Bowl & Rake Classifiers, 10′ dia. with 2′3″x19′8″ rake and 12′ dia. with 2′3″x21′4″ rake.

BELT CONVEYORS
1—30″x24′ long, heavy steel frame, semi-portable.
1—30″x120′ c/c Rex-Stearns anti-friction idlers; steel frame.
1—30″ x approx. 500′ c/c with Jeffrey anti-friction idlers, gear reducer, motor, take-up, etc.

OLIVER CONTINUOUS FILTERS
1—8′x8′ rebuilt, with new wood staves, wood grids and new internal piping.
2—8′x10′ with steel closed drums, wood staves, steel troughs, complete.

HAMMER MILLS
1—No. 1 Williams "Jumbo Jr."
1—No. 1 Sturtevant Swing Sledge type.
1—No. 2024 Dixie Jr.
1—No. 36-40 Dixie Non-Clog type with 150 H.P., 3/60/2200 volt motor.
1—No. 5 Williams Roller Knife Shredder with 40″x30″ rotor.
1—No. 2XB Gruendler, 24″x20″, grate discharge.
2—42″x36″ Type "B" Jeffrey, ball bearings.

CONSOLIDATED PRODUCTS COMPANY, INC.
17-19 Park Row New York, N. Y.
Shops and Yard at Newark, N. J. cover eight acres.

FOR 25 YEARS A SYMBOL OF CONFIDENCE
CONSOLIDATED PRODUCTS COMPANY, INC.
17-19 PARK ROW NEW YORK, N. Y.
Shops and Yard at Newark, N. J., cover eight acres.

AVAILABLE

1—⅜ Yd. Model OB BUCKEYE Crane
1—¾ Yd. Model 400 P&H Crane & Dragline
1—1¼ Yd. Model 75-A LORAIN Shovel
1—Model K48 LINK-BELT 2½ Yd. Dragline
1—Model 40 LORAIN Shovel Front
1—20 Ton BROWNING Locomotive Crane
1—20 Ton LINK-BELT Locomotive Crane
1—Model 2 NORTHWEST Shovel Attachment
1—Model 35 LORAIN Backhoe Attachment
1—8x24 UNIVERSAL Jaw Crusher
1—8x12 UNIVERSAL Jaw Crusher
1—150 Ton Steel Bin, Stationary type
1— 40 Ton PORTER 0-4-0 Steam Saddle Tank Locomotive Rebuilt and guaranteed
1—36″ x 11′ GOOD ROADS Rev. Screen and 16″ x 49′ Belt Conveyor & Hopper, both with motors. Ideal for sand screening.

WANTED AT ONCE

1— ½ Yd. Shovel & Backhoe
2—1½ Yd. Diesel Stripping Shovels
1—24x36 FARRELL Jaw Crusher
1—150 Ton Steel Bin
2— 75 Ton Steel Bins
2—Portable Gravel Plants with 936 Jaw & Roll Crushers (CEDAR RAPIDS preferred)
1—6x8 Jaw Crusher
1—D7 Caterpillar & Angledozer

• • •

PATTERSON EQUIPMENT CO.
1468 West 9th St., Cleveland 13, Ohio
Cherry 0439

FOR SALE
1—Monighan Walker 3 cu. yd. Dragline Diesel powered.
1—Hardinge Pebble Mill 8′x48″ flint liners.
1—Hardinge Conical Scrubber 6′x48″.
1—Manitowoc Rotary Dryer 72″x37′ oil fired electric driven.
1—Reliance Jaw Crusher 10″x15″.
1—Reliance Jaw Crusher 10″x20″.
4—Model 60 Caterpillar Tractors 2 with Bulldozers.
1—Worthington 10″ Centrifugal pump, complete with 200 H.P. Electric Motor.
1—Allis-Chalmers 8″ Centrifugal Pump.
2—Totally enclosed Vertical Elevators 14″ buckets, complete with Electric power.
5—Austin Western 5 cu. yd. Side Dump Cars.
6—Easton all steel 6 cu. yd. 2 way Side Dump Cars.
1—Chicago Pneumatic Portable gas power Compressor. Size 8¼″x8″.
2—Concrete stave silos 18′ dia. 32′ high.
1—Loomis Drill Traction Wheels Electric powered.
5—24″x18′ Lewistown Screw Washer, completely new, never used.
Michigan Silica Company
Rockwood, Michigan

FOR SALE
PAGE DIESEL DRAGLINE
2 cu. yd. 60′ boom. M-411. Recently overhauled. Ready to go.
C. D. Smelser Const. Co.
511 W. Colfax Ave.
So. Bend, Ind.

FOR SALE
50 HP 1200 RPM Squirrel Cage Motor
75 HP 900 RPM Slip Ring Motor, 440 Volt, 3 Phase, 60 Cycle
G. & W. H. Corson, Inc.
Plymouth Meeting, Pa.

FOR SALE: Lime Plant—Southern Indiana. Five (5) vertical kilns with equipment; good condition. Fifty-five acres land; unlimited deposit High Calcium Colitic Stone; also stone suitable for manufacture of Rock Wool.
Box 1235, c/o Pit and Quarry
538 So. Clark Street Chicago 5, Illinois

Advertise your wants and surplus equipment in

PIT AND QUARRY

SURPLUS STEEL
ANGLES

6 x 6 x 7/8"
7 x 4 x 3/8"
8 x 4 x 7/16"
8 x 6 x 3/4"
8 x 8 x 5/8"
Lengths 30' to 50'

E. COHN & SONS
CEDAR RAPIDS, IOWA

LOCOMOTIVES

1—20 ton Plymouth standard gauge gasoline
1—20 ton Whitcomb diesel 36" gauge
1—57 ton Baldwin type 0-6-0 standard gauge saddle tank
2—67 ton American type 0-6-0 standard gauge separate tenders
2—78 ton Baldwin type 0-6-0 standard gauge side tanks

B. M. WEISS COMPANY
Girard Trust Company Building
Philadelphia 2, Pennsylvania

LOCOMOTIVES

1—6-Ton Gas Locomotive, 36" Ga., Milwaukee Locomotive Works
1—9-Ton Gas, 36" Ga., Whitcomb
2—25-Ton 0-4-0 Porter Saddle Tank Locos. Oil burners; A. S. M. E. Code, Excel. Cond.
2—43-Ton Baldwin-Westinghouse Electric Locomotives, 600 Volt D.C.
1—50-Ton 0-6-0 Vulcan Locomotive
1—60-Ton Westinghouse Electric Locomotive, 550 volt D.C.
1—65-Ton 2-6-0 Mogul Loco. Oil-burning
1—70-Ton 0-6-0 Baldwin Switching Loco. ICC condition.
3—80-Ton 0-6-0 Lima Switching Locos.
3—70-Ton Gas-Electric Locomotive—steel floors T/E 35, 300#. Built in 1925 and 1927; excellent condition.

Other Locomotives, Too

IRON & STEEL PRODUCTS, INC.
40 years' experience
"ANYTHING containing IRON or STEEL"
13490 S. Brainard Ave., Chicago 33, Illinois

FOR SALE

Sauerman 1 yard Super-Heavy Rock handling bucket; new condition.

1—Telsmith 60" Super-Scrubber for gravel washing.

1—6" McCully Finishing crusher — V-Pulley.

1—Gould 1400 GPM/160' TDH Centrifugal—75 HP and other pumps.

A. R. AMOS, JR.
713 Commercial Trust Building
Philadelphia, Pennsylvania

BONDED SCALES, VIBRATING SCREENS, CRUSHERS

15 ton, 22'x 9' Truck Scale....	$ 440.00
20 ton, 24'x10' Truck Scale....	575.00
20 ton, 34'x10' Truck Scale....	815.00
3'x6'—1-deck Vibrating Screen	495.00
3'x8'—2-deck Vibrating Screen	685.00
3'x8'—3-deck Vibrating Screen	885.00
Double-Roll Crusher	345.00

BONDED SCALE COMPANY
110 Bellview, Columbus 7, Ohio
Phone Garfield 1651 Eve. University 2832
Immediate Shipment

TVA DRILLING & JACK-BITES

I have purchased the large lot of splendid drifter drills, jack-hammers, jack-bits, etc., at Apalachia Dam, Tenn., TVA bought most of this equipment in 1942 and 1943 and has kept it in excellent condition. Will offer this virtually new equipment at approximately half price, and will ship subject to your approval upon arrival and before payment.

60 IR drifter drills, DA-35; centralizers and automatic power feed.

13 GD paving breakers, B72-H.

2 Sullivan paving breakers, K-7.

3 IR Jack-hammer drills, Model S-68.

2 GD Jack-hammer drills, Model S-55.

37,000 IR detachable jack-bits, Type 2, 4 point; side hole; sizes 1 11/16 to 2½". Detailed list on request.

ALSO

400 tons structural steel at Douglas dam, nearby. This includes 36" std. I beams and 14" to 21" H columns, 4x6 and 6x8" angles; all long lengths.

300 lbs. Rock cork asphalt; Johns-Manville Co.

1 Page dragline buckets; ¾ yd.

23" dia. lifting magnet; 210 volts A.C.

54" x 22" single roll Ocola knob roll crusher. 4 extra rolls.

4 Brooks 2 yd. Loadluggers, Model CH 200, with 90 buckets; 4—1½ yd. with 160 buckets.

Clutch pulley, 6 ft. dia. x 29" face.

Curtis Portable Air Compressor, 210 cu. ft., on 4 hard rubber wheels; powered by Continental gasoline engine. Price $850.00 completely shop overhauled.

SAM SMITH, Machinery
P. O. Box 289 Phone 248 Marianna, Fla.

DEPENDABLE USED MACHINES

Special—Pioneer 40x22 roller bearing roll crusher, built 1937.

75 ton steel bins clam buckets, all sizes, belt conveyors and parts.
Link Belt ¾ yd. crane
10x20 portable crusher
Byers 1 yd. dragline
P&H 1 yd. dragline
gas engines 35 to 125 HP
Clarage No. 80 fan
Pioneer Duplex gravel plant
Williams No. 6 hammermill
Link Belt bucket loader
4 ton Vulcan locomotive
42x72 Robins Screen
36 in. sectional track

3506 W. 51st St. **TRACTOR & EQUIPMENT CO.** Chicago 32, Ill.

FOR SALE

2—2' Symons Cone Reduction Crushers.
2—3' Symons Cone Reduction Crushers.
2—4' Symons Cone Reduction Crushers.
1—5½' Symons Cone Reduction Crusher.
1—7' Symons Cone Reduction Crusher.
6" x 6" Air Compressor complete with 15 H. P. 220 V. 3 ph. 60 cy. motor.
5—30 to 100 Ton Steel Guy Derricks.
10—Overhead Electric Traveling Cranes.
2—4 ton floor controlled 220/3/60—46' span cranes.

National Equipment Company
400 West First Street
Phone 4361 Bloomington, Indiana
Need any used items?
Have any for sale?

QUARRY SUPERINTENDENT

Wanted a man thoroughly qualified to take full responsibility of an operation producing one to two million tons stone annually. Must have a past record of unquestionably proven ability and accomplishment, fully familiar with equipment involved, and able to handle large organization. Permanent position with real opportunity. Reply giving age, experience and last salary.

Reply, care of Pit and Quarry, Box 121
538 South Clark St., Chicago 5, Ill.

SHENANDOAH LIMESTONE PLANT FOR SALE

CONSISTS OF 17.28 ACRES OF LIMESTONE ROCK, 4 KILNS WITH ESTIMATED CAPACITY OF 40 TONS PER DAY. EQUIPPED WITH A STEAM BOILER WITH SHED HOUSING, STEAM HOIST, LIME LOADER & SCALES. PLANT LOCATED IN HEART OF LIME PRODUCING TERRITORY OF SHENANDOAH VALLEY OF VIRGINIA AT STRASBURG JUNCTION. HAS SPUR TRACK WITH SWITCHING FACILITIES FURNISHED BY BOTH THE SOUTHERN, & THE BALTIMORE & OHIO RAILROADS. OFFICE BUILDING ON GROUND CONVENIENTLY LOCATED TO PLANT PROPER. EXCELLENT INVESTMENT OPPORTUNITY.

Inquire Box 109, c/o Pit & Quarry
538 South Clark Street Chicago 5, Illinois

75—Used Steel-Brooks Load Lugger Buckets; 1½ yds. capacity. V shaped bottoms —rounded, with ring hooks.

• • •

CLINE & DOOCHIN
707 19th Ave. North
Nashville 4, Tenn.

FOR SALE

No. 3 Williams Hammer Mill. Factory Rebuilt. $1800.00.

•

Box 107, c/o Pit and Quarry
538 S. Clark Street, Chicago 5, Ill.

FOR SALE

1—Buffalo-Springfield 10 ton Gas Roller Universal Truck Crane, 35 ft. boom.
Marion 1½ yd. Shovel & Crane.
2—General Electric Welders — 300 Amps.
2—225 Horse Power Locomotive type Boiler—200 lbs. pressure.
3—One 60 H.P. Three Drum National Hoist.
Several 60 Horse Power Double Drum Hoists with Derricks

INDUSTRIAL MACHINERY & SUPPLY COMPANY
217 East 5th Street
New York 3, N. Y.

2—No. 200 Rex double pumpcretes, excellent condition, with Waukesha 6-cylinder gas engines complete with pugmill remixers and 1,200 ft. 8" pipe.

2—30B Diesel driven caterpillar cranes with dragline and shovel attachments.

1—No. 480 Marion steam crawler crane without attachments.

1—Complete I-R No. 54 drill steel sharpener with one 27F oil furnace, one JF furnace, one shank and bit punch, cut-off machine, etc., etc., in guaranteed condition.

1—5 Cubic yard Owen clamshell bucket—weight 27,000 lbs.

GREAT LAKES DREDGE & DOCK CO.
122 So. Michigan Ave., Chicago 3, Ill.

PLANT EQUIPMENT

TYLER HUM-MER SCREEN
Type 31—Two 3'x5' screen surfaces, complete with generator.

GYROSET VIBRATING SCREENS
NEW—24"x48" Screening Surface

37" BEDFORD OPEN SIDE PLANERS
13' and 15' BEDS

INSLEY GUY DERRICK
85' MAST—75' BOOM

FAY & EGAN DOUBLE SURFACER PLANER 24"

• • •

INLAND EQUIPMENT COMPANY

P. O. Box 477, Nashville, Tennessee

"Northwest gas crawler 40' boom crane, old but mechanically very good, $500.00 extra new parts. Bought new by cement mill, closed down 10 years. Go right to work."

Bucyrus-Erie AX like new Drag Bkt.
Byers late model chain cwd ½ yd. Sh. attachment.
30' crane boom & ⅝ Owen clam Bkt.
2—Sets Brooks CH200 Load Luggers, practically new, with bkts.

Kenney Machinery Company
2136 Jefferson St., Kansas City, Mo.

HAVE surplus stock of Sauerman Bros. Single Sheave Blocks with and without bushing. Sell cheap. Write for details.

Mahoney-Clarke, Inc., 217 Pearl St.
Whitehall 3-0760, New York 7, N. Y.

FOR SALE

Bucyrus-Erie Gas-Air Crane fitted as dragline with 40' boom. S/N G2-10427, Waukesha Motor Models WS 11 K, S/N 156326 (New Sept. 1929). This motor has a butane head and 6¾ x 8 bore instead of a regular head and 5¾ x 8 bore. Equipped with Omaha bucket Type BPX, S/N 536.

Shovel Attachment complete and Supplementary Front Drum.

• • •

C. F. RABBEITT & COMPANY
Chestnut 0188
1523 North Broadway, St. Louis, Mo.

FOR SALE

1 Lime Plant Complete

1—110x42 Steel Covered Bldg.
1—60x50 Steel Storage Bldg.
1—7'x180' Lined Rotary Kiln.
1—Steel Stack.
1—No. 3 Williams Mill.
1—609 Symons Disc Crusher.
3—32' Bucket Elevators.
1—32"x10' Trommel Screen.
2—Screw Conveyors.
1—36 ft. Elevator.
2—10'x20' Steel Tanks.
1—Measuring Hopper.
1—Lot of 440/3/60 AC Motors, Pulleys, Belts, Starters, Pipe Shafting, Pumps, Boilers.
1—Lot 15, 20 and 25 ton Locomotive Cranes, Dble. Drum.
1—Locomotive Hoist (Electric).

• • •

Hawkins & Company
124 So. Michigan Ave., Chicago, Ill.

---

(3) Buda Diesel Power Units, 180 H.P. 6 L.D. Late models.
(6) Euclid 10 yd. Diesel Rear Dump Trucks.
120-B. Bucyrus-Erie, 4 yd. Electric Shovel.
Brooks Load Luggers, latest model CH-200, 2 yd. buckets. Practically new. $750.00.
4 ft. x 10 ft. Lippmann Triple Deck Vibr. Screen.
2 ft. and 3 ft. Symons Cones, with or without electric motors.
Dismantling complete quarry plant, among same:—
Electric Motors, 3-60-220-240 Volts, 2 H.P. up to 100 H.P.
McLanahan 18" x 36" Double and Single Rolls.
Williams NF-3 Hammermill tex-rope 75 H.P. Motor.
80 ft. x 24" Bucket Elevator.
40 ft. x 18" Bucket Elevator.
40 ft. x 12" Bucket Elevator.
4 ft. x 10 ft. electric 3-deck Vibr. Screen.
7" Newhouse Reduction Crusher.
550 ft. Two-Stage Ingersoll Rand Stationary Compressor.
160 ft. Portable two-stage I. R. Compressor on rubber.

M. Wenzel, 2136 Jefferson Street, Kansas City, Mo.

Plymouth and Milwaukee gas locomotives, 8, 12, 25, 35 tons; 36" and std. ga., A-1.
Davenport, Porter, Vulcan 18 to 20-ton steam 36" gauge S/T locomotives, (4), rebuilt, tested.
Vulcan 18-ton steam S/T locomotives, 42" gauge.
Porter 52-ton steam S/T locomotives, (2), std. ga.
Bucyrus 50B and 80B steam crawler shovels
Bucyrus-Erie 4-yd. electric shovel, Model 120B.
Bucyrus-Erie 1¼-yd. gas-air comb. shovel-dragl.
Monighan 3-yd. Diesel-electric Walking dragline.
American railway ditcher-crane, steam, ¾-yd.
Pioneer 300W portable gravel washing plant.
Gyratory crushers, 12", 21", 27"; 7" Newhouse.
Page Diesel 2-yd. Walking dragline, 65' boom.
Euclid 6-yd. bottom dump crawler wagons (8).
Bucyrus 30' shovel boom, for 50B Machine.
Boiler tubes, 236-1¾"x5', ferrules, (new).

H. Y. SMITH COMPANY
828 N. Broadway **Milwaukee 2, Wis.**

Jaw Crushers, 24x36 Farrell Bacon Blake type 15x36 and 15x24 Universal
Portable Crushers, 9x36 Black Diamond roller bearing self propelled. Cedar Rapids 8x24
1 cu. yd. Northwest **Electric Shovel** Model 30 **Caterpillar Tractor** with hydraulic bulldozer
Diesel Power units, 2 Hesselman 100 H.P. 3 Cummins 60—65 & 75 H.P. 2 Budas 125 H.P. Fairbanks Morse 60 & 180 H.P.
Gasoline Power units, Waukesha 125 H.P. Wisconsin 150 H.P.
Bucyrus Erie 1½ cu. yd. **Gas Shovel** 3—160 H.P. **Diesel Gen. Sets**

WM. ASHMUS
5125 Thirty-Third Ave., Kenosha, Wis.

NEED HELP, EQUIPMENT, A COMPLETE USED PLANT?

☆

Thousands of equipment items and services are offered each month in the Broadcast Section of Pit and Quarry. You can probably find just what you are looking for by reading the ads carefully. But, should you fail, a small "wanted" advertisement costing as little as $6 may do the trick. Bring the problem to us . . . write the ad yourself or tell us in your own way what you are seeking, and we'll prepare the copy for you.

PIT AND QUARRY

Broadcast Section

FOR SALE

Westinghouse Induction Motor Type CS 7.5 HP 440 Volts 25 Cycle 3 phase 9.3 Amps 720 RPM Style 212334-A Serial No. 2339990 Squirrel Cage 40° C Cont.

Same as (1) Serial No. 2185012.

G. E. Induction Motor No. 520894 Type 1 7.5 HP 11 Amps Sec. Amps 45 440 Volts 685 RPM Full Load 3 Phase Wound Rotor 25 Cycle 40° C Cont.

Northwestern Mfg. Co. Induction Motor No. 62479 Type HW 40A 440 Volts 25 Cycle 720 RPM 30 HP 38 Amps 58 Rotor Amps Wound Rotor.

F. M. Induction Motor Ser. No. 64586 Frame H10D Type H 10 HP 750 RPM 3 phase 25 Cycle 14.3 Full Load Amps 40° C Cont. Squirrel Cage.

G. E. Induction Motor 3 Phase Model No. 69A943 Form C 25 Cycle Type KT 948 5 HP 440 volts 40° C Cont. 1430 RPM No. 4651320.

G. E. Induction Motor Model No. 11C158 Type MT 533 Form B 440 volts 3 Phase 25 Cycle Sec. Volts 92 Sec. Amps 133 Amps 33 No. 4815380 700 RPM 25 HP 40° C Cont. Wound Rotor.

G. E. Induction Motor Model No. 18608 Type KT 533 440 Volts 25 Cycle 3 Phase 30 Amps 25 HP 40° C Cont. 725 RPM No. 4554976 Squirrel Cage.

G. E. Transformer No. 544891 Type WCT Form H 25 Cycles 500 KW 3 Phase Volts 13200/11880Y —460/480/500.

G. E. Transformer—Same as (1) except No. 544892.

G. E. Transformer No. 2900818 Type WCT Form HDD 25 Cycle 600 K.V.A. Cont. 550 C Imp. Volts 2.56 3 Phase Volts 13800—500.

G. E. Transformer No. 554461 Type H Form RP 25 Cycles 100 KW Single Phase 480/440—100.

1—100 HP 2200 Volts 3 Phase 60 Cycle 680 RPM Allis-Chalmers Motor
1—225 HP 440 Volts 3 Phase 25 Cycle 720 RPM Slip ring G. E. Motor
1— 75 HP 440 Volts 3 Phase 25 Cycle 1 Form M 720 RPM Slip ring G. E. Motor
3— 25 HP 440 Volts 3 Phase 720 RPM 25 Cycle G. E. Type 1 Form K Motor
1— 11 HP 220 Volts 3 Phase 750 RPM ITC 60 Cycle Slip ring Motor G. E. make
1— 15 HP 220 Volts 3 Phase 900/1800 RPM Slip ring Watson Motor

All are priced for quick sale. Phone, write or wire. Immediate delivery. All in good electrical condition.

1—37 B Bucyrus 1½ yd. Erie Shovel in good working condition
1—33 B Bucyrus-Erie 1¼ yd. Shovel—1940
1—75 B Lorrain 1¼ yd. Shovel in good working condition

Allis-Chalmers HD10
Very late model tractors and Bulldozers
1—TD18 International Tractor 1941 Model with Bulldozer
2—D7 Caterpillar Tractors with Bulldozer good condition

Write for complete detail and listings:

GARSON IRON & STEEL COMPANY

523 Lyceum Building
Duluth 2, Minnesota
Melrose 222

M. C. SOLON
2410 East 8th Street
Duluth, Minnesota

For Sale

New Galvanized Wire Strand Rope Extra High Strength
Approx. 25,000 ft.— 1" diameter
Approx. 10,000 ft.—¾" diameter
Used Wire Rope 6x19 Const. Approx. 5000 ft. 1⅜" diam. 2000 ft., 2" diam.
30 **Steel Tackle Blocks,** misc. sizes
11—4 yd. **Koppel Side Dump Cars**—36" gauge
International Power Unit—Gas—Kerosene, 27 H.P. Model 200
Rumsey Pump—Vertical Triplex Size 4 x 6
Worthington Pump—Vertical Triplex Size 3½ x 4
4" **Pulsometer Steam Pump** No. 7
Ingersoll-Rand Drill Sharpeners No. 4 and No. 5
Air Tank 5" diam. by 8'—4" long, ½" plate
Stationary Compressors
Single and Double Drum Hoisting Engines steam & electric drive

Above very reasonable. For prices and particulars write

S. WEINBERG CO.
Granville, N. Y.

FOR SALE
ALL OR IN PART

Sand and Gravel Plant Including Jaw Crusher, Gyratory Crusher, Conveyors, Vibrating Screens, Sand Classifiers, Extra Heavy Scrubber, Water Pumps, Sand Pumps, Feed-O-Weights, Weightometers, Trestle and Tripper and Auxiliary Equipment.

Also

Approximately 9 Miles of Conveyor Complete with Belting, Pulleys, Troughing and Return Idlers and Drive Equipment.

All Offered Subject to Prior Sale.

For Particulars Write

COLUMBIA CONSTRUCTION COMPANY, INC.
Box 579, Redding, California Tel. Redding 1440

FOR SALE

Dragline-Shovel. Model 1400 P&H Electric Dragline. 100' boom, 4 yard bucket. Completely rebuilt.

Model 5120 Marion Electric Dragline with 100' boom and 3 yard dragline bucket. Excellent condition.

¾ yard Osgood Commander Gasoline Shovel. Rebuilt.

• • •

Frank Swabb Equipment Co.
Hazleton, Pa.
Telephone 3906

DIESEL GENERATORS

1—Diesel Generator Set, 300 HP., Fairbanks-Morse Diesel, 6 cylinder, Model 32, complete with auxiliaries, 257 RPM., direct connected to a 250 KVA Fairbanks-Morse Generator.

AIR COMPRESSORS

1—Ingersoll-Rand Duplex Air Compressor, Type XB, 582 cu. ft. motor driven.
1—Ingersoll-Rand Imperial, Type XB-2, Duplex Air Compressor, 12"x7½"x12".

COOLERS AND DRYERS

1—3½'x40'; 1—10'x90' and others.

CRANES AND SHOVELS

1—P & H 1-yd. Shovel, Gasoline, Reconditioned.
1—Locomotive, 4-wheel, 10-ton, 25' boom, Brown Hoist Co.

CRUSHERS

2—No. 5-6-8 Gates Gyratory Crushers, Style D. Others—various types and sizes.

HOISTS

1—S. Flory Mfg. Co. single drum Hoist. Handles 11 ton car up 12% grade 500 ft. per min.

KILNS

1—8x9½x180 ft. And others.

LOCOMOTIVE AND CARS

1—4-ton Vulcan Iron Works, Class AW-4, Worm Gear Gasoline Locomotive, 36" gauge.
6—5-yd. Koppel 2-way Dump Cars, 36" gauge.

DRILLING EQUIPMENT

1—No. 33 Ingersoll-Rand Leyner Drill Sharpener.
1—Improved Type No. 22 electric power Loomis Machine Company Clipper Drill, complete with motor.
2—Ingersoll-Rand DCR No. 430 Drills.
2—Denver-Gardner Co. (Turbo-Waugh) No. 37 Drills.
4—Denver-Gardner Co. (Denver-Waugh) No. 95 Drills.

FEEDERS

2—Bailey Pulverized Coal Feeders, Type No. 2, complete with steel hoppers, 8½" ft. dia. x 12 ft. cone bottom. ¼

GRINDING EQUIPMENT

2—5½'x22' Allis-Chalmers Tube Mills.
3—5½'x20' F. L. Smidth Tube Mills. Silex Lined.
1—5'x22' Tube Mill.
1—5'x10' Tube or Ball Mill.
1—4-roll Raymond Mill.
3—Giant Griffin Mills.

ELEC. MOTORS & MG SETS

Large stock, rebuilt, AC or DC. 25 and 60 cycle.

AIR SEPARATOR

1—14 ft. Sturtevant Air Separator. New 1941.

TRACK SCALE

1—Homestead (Carnegie-Illinois Steel) Standard Track Scale, 46'-100 ton capacity. Complete.

TURBINE

1—100 HP Westinghouse Turbine, 2700 RPM, direct connected to 100 HP, Westinghouse Gear Reducer. Ratio 3 to 1.

WEBBER EQUIPMENT CO.

17 East 45th St. MU. 2-6511
NEW YORK 17, N. Y.

COMPRESSORS

231 CFM Type ER-1 Ingersoll Rand, complete with 75 H.P. 3/60/2200 V motor
308 CFM Type ER-1 Ingersoll Rand, complete with 75 H.P. 3/60/2200 V motor
368 CFM Type NSB Chicago Pneumatic horiz., complete with 60 H.P. G.E. 3/60/440 motor
515 CFM Type XB 2 Ingersoll Rand, complete with 100 H.P. 3/60/2200 V motor
518 CFM Type XCB Ingersoll Rand, with 100 H.P. slip ring motor
526 CFM Ingersoll Rand, Style "J"
888 CFM Ingersoll Rand, Type XB horiz. compound 2-st.
940 CFM Ingersoll Rand, 10 horiz. 2-st. steam-driven, with receiver

CRUSHERS

24" x 54" Superior Crushing Rolls
No. 3 and No. 6 McCully Gyratory

LOCOMOTIVES

1—6 ton Milwaukee, 36" ga., gasoline
1—7 ton Milwaukee, 36" ga., gasoline
1—9 ton Whitcomb, 36" ga., gasoline
1—30 ton Mack, diesel-electric, std. ga.

SHOVELS — CRANES & DRAGLINES

No. 2 Koehring 3-way comb. crane, dragline & shovel
Model 77 Lorain comb. crane, dragline & shovel, 1½-yd. cap.
Model 780 P&H Dragline, 75' boom, 2-yd.
320-B Bucyrus Stripping, 6½-yd. cap.
Model 54-B Bucyrus Dragline, 70' boom with light plant, powered by Buda diesel engine
Model 80 Northwest Dragline, 70' boom, powered by Twin City oil engine

TANK & TOWER

60,000 gallon Water Tank on 89'9" tower, with 10" riser pipe.

TANKS, Storage

All capacities — Expertly rebuilt!

TRACTOR WAGONS

7, 7 cu. yd. Allis Chalmers Speed-Ace
(Write for illustrated bulletin)

IRON & STEEL PRODUCTS, INC.

13490 S. Brainard Ave., Chicago 33, Illinois
"Anything containing IRON or STEEL"

LOCOMOTIVE CRANE AND SPARE BOILER

25 Ton Industrial 42' Boom Mass. Code Boiler, 160# Press., 8 Wheels, Steel Side Frames.
COMPLETELY REBUILT
Immediate shipment
54" ASME Code Crane Boiler
REBUILT
Fits any Crane

HAWKINS & COMPANY
124 So. Michigan Ave., Chicago, Ill.
Phone Har. 0725

Int. Diesel TD-14 Tractor with Bulldozer and double drum winch.
45 ft. Crane Boom. Also Pull shovel attachment for Lorain 75A or 75B.
1¼ Yd. Byers Gas Shovel.
1 Yd. B-Erie Gas-Air Shovel.
20 KW and 30 KW. Int. & Cat. diesel electric sets.
1 Yd. Link Belt K-30 gas shovel.
14 ton Whitcomb Loco-Gas—36 Ga.
20 ton Plymouth Loco-Gas—Std. Ga.
27—E. Smith Paver, Model H-31.
5—Electric Hoists, 40, 50 and 60 HP.
1 Yd. Round Shaft Buckets.
1 Yd. and ½ Yd. Dump Buckets.
2—Shovel Attach. for Byers Bearcat, Jr.
Shovel Attachment for 41B Bucyrus-Erie.

J. T. WALSH
Brisbane Building Buffalo 3, N. Y.

CRUSHERS, ROLLS, MILLS

ACME 6"x21" type C jaw crusher, roller bearings
Buchanan 10"x16" Blake type jaw crusher
New England 11"x20" jaw crusher, cast steel frame
Scholl 9"x16" jaw crusher, heavy cast frame
Traylor "BULLDOG" 11" gyratory crusher
Sturtevant No. 0 Rotary Fine crusher
Buchanan 2 roll crusher, 30"x14", C
A-C double roll crusher, 42"x16"
Robins double roll 24"x30" coal crusher
Single roll 24"x24" spiked crusher
Simplex coal pulverizer with roller bearings
Williams #2 hammermill
Mid-west #2 hammermill
Eight tons of steel balls, 1" to 2"

BUCKET ELEVATORS & CHAIN

Chain elevators, 16", 18" and 20" buckets
Elevator casing, 16"x58" of ¼" plate
50' chain elevator with 8" malle. buckets
Continuous 14"x42' chain bucket elevator
Continuous 14"x50' chain bucket elevator
Continuous 30"x40' double chain bucket elevator
Grain elevators, with 5" to 18" buckets on belt
Link Belt chain barrel elevator
500' of Pindle chain #730
500' of Jeffrey 126 DI—left & right roller chain
360' #3 Champion Oilwell roller chain
150' L-B chain #847 with K2
300' L-B chain #825 with A42
300' Ewarts malleable chain #124
300' Jeffrey #1123 roller chain
400' of #78 chain with Salem buckets, 5" & 8"

VIBRATING & REVOLVING SCREENS

Robins "GYREX" double deck 4'x10' screen
Simplicity three deck 3'x6' vibrating screen
PLAT-O single deck 3'x6' vibrating screen
Jigger three deck 2'x5' vibrating screen
Hummer single deck 3'x5' vibrating screen
Hummer single deck 4'x5' vibrating screen
Generator for Hummer screens
Revolving screens: 4'x16' and 4'x22'

CONVEYORS

Conveyor 24"x96' with steel-belt
Jeffrey all steel foundry conveyor, 42"x150'
Jeffrey 24" Standard Steel Apron Feeder, 25'
Link Belt single flight conveyor, 15"x56'
Flat steel-plate conveyor, 47"x25'
Haiss 14"x24' Portable flat belt conveyor
Belt idlers and conveyor belt
Belt conveyor pulleys for 12" to 42" belt
Belt trippers for 14", 16", 18" belt
Weller 36" horizontal automatic take-ups
Screw conveyors 12" and 16" flights

MISCELLANEOUS

Lidgerwood single drum 15 hp electric hoist
National double drum 25 hp electric hoist
Sauerman double drum 50 hp electric dragline
Chicago belted air compressor, 529 CFM, NSB.
Electric Motors from 1 to 100 hp
Morris 6F manganese lined sand pump
Ellicott 4" belted sand pump
Worthington 4" centr. pump with 25 hp motor
Two 6" centr. 15 hp electric vertical pumps
4 ton and 8 ton 36" gauge gasoline locomotives
20" and 24" flat cars
400 hp V-belt double pulley drive with V belts

Stone Working Equipment

2 Meyers stone saws, 48" and 60" dia. Late type
1 Lincoln open side electric planer, 42"x12'
2 Lincoln open side electric planers, 36"x12'
1 Patch 36"x12' open side belted planer

G. A. UNVERZAGT & SONS
136 Coit Street, Irvington, New Jersey

ONE WAY TO USE YOUR HEAD IN THE CONSTRUCTION BUSINESS

Thousands of heroic Chinese literally used their heads in constructing the world's largest military airports. In U.S.A. the best way to use your head is to select the *most suitable* Construction Equipment for each job. E. C. A. has it for RENT or SALE.

CLAMSHELL BUCKET

1—5 yd. Kiesler bucket, Style N, digging or rehandling. NEW 1943. Wt. 11,500 lbs.

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

ELECTRIC CRANE

1—18 ton O. & S. Type B CRANE, mtd. on 8' 0" ga. track, 50' boom. Power 52 H.P. 440/60/3 elect. mtr.

CRUSHERS

1—No. 2 Climax jaw crusher, size 9x16".
1—Buchanan jaw crusher, size 10x16".
1—Acme jaw crusher, Ser. No. 1873, size 12x20"
1—Acme jaw crusher, Ser. No. 1686, size 9x16"
1—No. 3 Champion jaw crusher, size 7½x13".
1—United Iron Works, "Blake-type" jaw crusher, size 9½x24".
1—No. 9 New Holland jaw crusher, size 6x9".
1—Sawyer Massey jaw crusher, size 9x18".
1—Allis Chalmers No. 5 gyratory crusher, Ser. No. 5331, opening 10x38".
1—Austin No. 5 gyratory crusher, Ser. No. 2945, opening 12x35½".

DERRICKS

3—Steel guy Derricks; 1—20 ton American, steel derrick, 110' mast, 100' boom. 1—5 ton Terry Guy Derrick, 70' mast, 60' boom. 1—5 ton Insley, 75' mast, 80' boom. Stiff leg derricks; 1—25 ton Hunter, 40' mast, 80' boom. 1—2 ton Pittsburgh, 26' boom, 15' mast. Also a number of wood stiff leg derricks, 1 to 5 ton cap.

HOISTS (Electric, Gas, Steam)

85—Electric, ranging from 30 H.P. up to 125 H.P., consisting of triple-drum, double-drum and single-drum, with AC or DC motors, some with attached swingers. Following makes: American, Clyde, Lambert, Lidgerwood and National.
Gas hoists ranging from 8 to 120 H.P., single, double and triple-drums; all standard makes (38 in stock).
Steam, ranging from 8 H.P. to 60 H.P. single, double and triple-drum; all standard makes.

PUMPS (Elect. Centrifugal)

HORIZONTAL:
1—10x8" Weiman-Jaeger #P-4201, power 50 HP AC motor; capacity 2500 GPM @ 35' head.
1—8x6" Worthington, 4 stage, #676005W, without power. Capacity 900 GPM @ 875' head.
1—8x8" Worthington, #816521, power 50 HP AC motor. Capacity 2000 GPM @ 30' head.
1—6x6" Morris, #109098, power 100 HP, 2200/60/3 slip ring motor. Capacity 1200 GPM @ 240' head. Shut off head 270'.
1—6x5" Fairbanks-Morse pump #441649, combination gas and electric power, one end Buda engine, other end 50 HP AC electric motor, operate either power. Capacity 1000 GPM @ 150' head.
1—6x6" Deming pump #DC41411, power 25 HP AC motor. Capacity 1000 GPM @ 70' head.
1—6x6" Allis-Chalmers #5418, power 40 HP AC motor. Capacity 1000 GPM @ 50' head.
2—6x5" Union pumps, #174832, 174415, power 20 and 15 HP AC motors. Capacity 650-750 GPM @ 90-40' heads.
1—5x4" Dayton-Dowd pump #4713, power 10 HP AC motor. Capacity 500 GPM @ 40' head.
4—5x3" Ingersoll Rand pumps, 2 stage #79576, 79574, 79575, 80252, power 100 HP AC motors. Capacity 525 GPM @ 500' head.
1—5x4" Dayton-Dowd pump, #4713, power 10 HP AC motor. Capacity 500 GPM @ 40' head.
1—4x4" LaBour #4738, power 20 HP AC motor. Capacity 400 GPM @ 90' head.

VERTICAL:
2—12" Dayton-Dowd centrifugal pumps, #32923, 33145, power 50 HP AC motors. Capacity 4250 GPM @ 32' head.
1—6" Aurora pump, #5397, 30 HP AC motor. Capacity 450 GPM @ 25' head.
5—4" Economy pumps, #28615, 25055, 20215, 20217, 20124, power 7½ HP AC and DC motors. Capacity 100 GPM @ 100' head.
1—2½" Evinrude #2P092 power 1½ HP AC motor. Capacity 100 GPM @ 25' head.

WE HAVE A LARGE STOCK OF CENTRIFUGAL, LIFT AND FORCE, JETTING, DREDGING, TRIPLEX, ETC. PUMPS NOT SHOWN IN THIS LIST, GAS AND ELECTRIC POWER.

PARTIAL LIST ONLY — SEND FOR 48 PAGE STOCK LIST

All this equipment is owned by us and may be inspected at one of our plants. WE BUY—REBUILD, SELL AND RENT.

—CHICAGO 12, ILL.—	PHILADELPHIA 2, PA.
1160 S.	1513
Washtenaw Ave.	Race St.
PITTSBURGH 30, PA.	NEW YORK 7, N. Y.
P. O. Box 933	30 Church St.
Dept. PQ	Dept. PQ

EQUIPMENT CORPORATION of AMERICA

GOOD VALUES — ALWAYS
24x18" and 36x18" American Hammermills.
35 Ton Plymouth WLG Gaso. Locomotive.
80 HP to 550 HP Diesel Engines.
20 Ton American Steel Guy Derrick.
35 HP Clyde 2 drum swinger Gas Hoist.
1 Yd. P&H 600A gas crane and dragline.
35 Ton Steam Locomotive Crane.
80, 150, 250 HP HRT Steam Boilers.
MISSISSIPPI VALLEY EQUIPMENT COMPANY
513 Locust Street St. Louis 1, Missouri

---

25 ton Browning, 8-C steam locomotive crane
7½ yard Allis-Chalmers bottom dump trucks
10 yard Euclid rear dump trucks
40 ton gondola and flat cars, for plant usage
Try us for other equipment too.

ALLSTATES EQUIPMENT COMPANY
343 S. Dearborn St. Chicago 4, Ill.
Phone: Harrison 1821

RAILS NEW AND RELAYING
TRACK ACCESSORIES
from 5 Warehouses
L. B. FOSTER COMPANY
PITTSBURGH • CHICAGO • NEW YORK

GENERAL COMPRESSOR & TOOL CO.
186 Grand Street
NEW YORK, N. Y.

★

Large stock of new and used Ingersoll-Rand air compressor equipment.

FREIGHT CAR PRICES REDUCED

Now only half of recent peak prices
$500.00 to $1950.00
Which of these cars could YOU use?

40, Hopper, Triple, 50-Ton
25, Hopper, Double, 50-Ton
10, Hopper, Side-Discharge, 50-Ton
1, Hopper, Covered, 50-Ton
90, Refrigerator, 40-Ft., 40-Ton
16, Refrigerator, 36-Ft., 30-Ton
8, Ballast, Composite, 50-Ton
29, Box, 36-Ft., 40-Ton
18, Dump, K & J Automatic, 16-Yd., 40-Ton
9, Dump, Koppel Automatic, 30-Yd., 50-Ton; with Aprons
1, Dump, Koppel, Automatic, 20-Yd., 40-Ton, Drop-side Door
4, Dump, Western, 20-Yd., 40 & 50-Ton
25, Dump, Western Automatic, 30-Yd., 50-Ton; with Aprons
20, Flat, 40-Ft., 40 & 50-Ton
35, Gondola, Composite, 36-Ft., 40 & 50-Ton
6, Gondola, Steel, 50-Ton, High-Side
30, Tank, 8000-Gallon, 40 & 50-Ton

All cars are priced to sell!

IRON & STEEL PRODUCTS, INC.
40 years' experience
13400 S. Brainard Ave., Chicago 33, Illinois
"ANYTHING containing IRON or STEEL"

FOR SALE

3—48"x20' Allis Chalmers Revolving Screens
1—2½ cubic yard Manganese 100-B Shovel Dipper
1—3 cubic yard Manganese 100-B Shovel Dipper
1—Bucyrus-Erie Company Rock Grab
2—Seneca A.C. Arc Welders
1—Sullivan Diamond Core Drill
9—10-yard Woodford Haulage Cars
2—No. 6 Champion Jaw Crushers
1—No. 4, 8" Traylor Gyratory Crusher
1—No. 8, 16" Traylor Gyratory Crusher
2—No. 6K Gates Crushers

NEW YORK TRAP ROCK CORPORATION
230 Park Ave. at 46th St.
New York 17, New York

FOR SALE

A complete 8 kiln lime plant. Kilns are self supporting, easily moved. Stacey Schmidt vertical shaft kilns, large steel kiln building. Also steel tramway and steel bents. Immediately available at a bargain price. Will sell all or part. Also almost complete hydrating plant with Clyde Hydrator, tanks, etc. Located in New York State. For full information write **Box No. 115, Pit and Quarry, 538 South Clark Street, Chicago 5, Illinois.**

DIESELS

ALL SIZES TYPES

A. G. Schoonmaker Company

50 CHURCH ST. PHONE WORTH 2-0455

NEW YORK 7, N. Y.

BUSINESS ESTABLISHED 1898

CRUSHER — ELEVATORS — SCREENS — CONVEYORS

1—RELIANCE 8" x 14" Portable Jaw Crusher
1—New 9" x 15" BEAUMONT Jaw Crusher
2—Used 9" x 15" CHAMPION Jaw Crushers
1—10" x 20" CHAMPION Jaw Crusher
1—12" x 20" BUCHANAN Jaw Crusher
3—12" x 26" CHAMPION Jaw Crushers
1—#1030 CHAMPION Roller Bearing Crusher
1—4½" TRAYLOR Gyratory Crusher
1—#2F TELSMITH Gyratory Crusher
2—NEW Small Hammer Mills

JOHNSON & HOEHLER, INC.
Lansdowne, Pa.

Jaw Crushers—4"x8" up to 18"x36".
Crushing Rolls—16"x10" up to 54"x24".
Gyratory Crushers—No. 3, No. 12.
Ring Roll Mills—No. 0, No. 1, and No. 2.
Swing Hammer Mills.
Rotary Fine Crushers—Nos. 0, 1, 1½ and 3.
Direct Heat Rotary Dryers—3½'x35', 4'x30', 5½'x40', 6'x50', 7'x50'.
Semi-indirect heat Dryers—70"x35'.
Cement Kilns—3' up to 8' diameter.
Hardinge, Marcy & Fuller-Lehigh Mills.
Raymond Mills—Nos. 00, 0, 1, 2 Roll.
Tube—Rod and Ball Mills—3' to 6' diameter.
Vibrating Screens—Air Separators.
2 heavy, C. I. pulleys, 84" x 23".
New Dryers built for all purposes.

W. P. HEINEKEN
277 Fulton St., N. Y. Tel. Barclay 7-7298

FOR SALE

1—30 Ton Diesel Powered Standard Gauge Locomotive, 4 speeds forward and reverse. Standard couplers, Westinghouse Air Brakes and Worthington Air Compressor Model A-23. Manufacturer's rating: First gear 2½ MPH with drawbar pull of 15,000 lbs. Powered with Murphy Diesel Engine, 6 cylinder, water cooled.

1—50 Ton Baldwin Standard Gauge Coal Burning Locomotive, weight approximately 95,000 lbs. on Drive Wheels, Traction Force 21,500 lbs. Drive Wheels 50" diameter, wheel base 9'9". Boiler A.S.M.E. Maximum safe working pressure 180 lbs., 161 tubes 13'1" long x 2" dia., with safety valves. Tender capacity 6 tons coal, 4500 U. S. gal. water.

1—10 Ton Diesel Powered Standard Gauge Davenport Switching Locomotive, 4 speeds forward or reverse, closed type cab, Westinghouse Air Brake system, 4—24" side rod connected drivers. Manufacturer's rating 5,000 lbs. T. E. at 2.6 MPH, 2300 lbs. T. E. at 13 MPH. Powered with a Model D-8800 Caterpillar Diesel Engine, 4 cylinder, 5¾" x 8" with 2 Cylinder gasoline starting engine, 4 speed, Davenport, main transmission. Equipped with ARA Type Couplers, Westinghouse Type K-14-13 Air Brakes, Gardner Denver Air Compressor.

14—10 Ton Goodman 36" Gauge Storage Battery Mining Locomotives, 1939, 54" wheelbase, class "A" chassis. Mechanical brakes hand wheel control.

4—4 Ton Goodman 36" Gauge Storage Battery Mining Locomotives, 1938.

1—3 yd. Marion Electric Shovel, Ward Leonard Controls, Westinghouse M. G. Sets, 34' Shovel Boom, 23' Dipper Stick, 1940.

2—2½ yd. Marion Electric Shovels, Ward Leonard Controls, 31' Shovel Booms, 21' Dipper Sticks, with Dragline Attachment, 70' Lattice Boom.

2—2½ yd. Bucyrus Erie Model 75B Electric Shovels, Ward Leonard Controls, 29' Shovel Booms, 20' Dipper Sticks, with Dragline Attachment.

BOX 35, NEW ROCHELLE, NEW YORK
NEW ROCHELLE 2-7680

PIPE New & Reconditioned

ALL SIZES for ALL PURPOSES
Cut and Threaded to Your Specifications
VALVES AND FITTINGS
UNITED PIPE & SUPPLY CO., NORRISTOWN, PA.

CRUSHER—JAW

1—Traylor 36 x 42 with or without Pan Feeder.

CRUSHER—REDUCTION

1—Traylor 4 ft., type TY.

DIESEL MOTORS

2—Cummins 200 H.P., supercharged Diesel Motors for use in Euclid and other similar heavy trucks.

PAN FEEDER & CONVEYOR

1—Pan Feeder 48 x 10 ft.
1—Pan Conveyor 24 x 65 ft.

HAMMER MILL

1—Dixie Mogul Breaker Plate type, size 5024, hopper opening 24 x 24.

LOCOMOTIVES

1—Lima 80 ton, 6 wheel, Switcher with piston valve, with tender, superheater, code boiler, 200 lbs. pressure, electric lights, Walschaert valve motion, automatic lubrication; thoroughly modern, excellent condition, immediate delivery. For sale or rent.
1—Baldwin and 1—American, 6 wheel, Switchers with tenders, 70 and 80 tons capacity, ASME code boilers.
1—35 ton and 1—25 ton, gas, standard gauge, air brakes, thoroughly modern.
1—Milwaukee 12 ton, gas, standard gauge.

MINE HOIST

1—Allis Chalmers, single drum, 600 H.P., A.C., 2300 volts, drum 96" x 118" face, 2550 ft. 2⅛" rope, operating in balance, with all modern safety features.

PUMPS

4—Two stage centrifugal, high speed, ball bearing, direct to 350 H.P., 2200 volt, 3 phase, 60 cycle, cap. 1070 GPM @ 1000 ft. with across-the-line starters.

VIBRATOR SCREEN

1—Traylor FB-4 size 47" x 84" with generator.

SHOVELS & DRAGLINE

1—Marion 4 yd. Electric, model 4160, full revolving, crawler tread, Ward Leonard control equipment, late type crawlers; perfect condition. Located in Minnesota.
1—4 yd. Electric Shovel with 3 yd. dragline equipment, Ward Leonard control, 100' boom.

TRUCKS

4—Euclid 18FD, end dump, 15 tons capacity, 200 H.P. Cummins supercharged diesel motors; guaranteed condition.

LOG TYPE STONE WASHERS

2—Eagle Log type Stone Washers 7' x 30' steel tub, 36" dia. paddles.

WELL DRILL

1—Armstrong 29-T electric, crawler mounted, 220/440 volt, complete with cable tools, etc.

JAW CRUSHERS, GYRATORY CRUSHERS, ROLL CRUSHERS, DRYERS & KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.

WE WILL BUY ANY MODERN PIECE OF EQUIPMENT ANYWHERE

A. J. O'NEILL
Lansdowne Theatre Building
LANSDOWNE, PA.
Phila. Phone: Madison 8300

DIESEL COMPRESSOR—Worthington 315 ft. air-cooled, two-stage, Hercules diesel engine, portable, 1942 model.
TRACTOR-PIPE LAYER—"Caterpillar" RD6 with Cardwell side-boom.
DIESEL ENGINE—180 HP Fairbanks-Morse, Model 32E12, 360 RPM, 1942 model; used only 1500 hours.
DUMPTORS—Koehring (3) six-yard diesel; A No. 1 condition; rental only.
MOTOR GRADER—(5) "Caterpillar" $12 Diesels; rent only.
AIR COMPRESSOR—Stationary, belt driven, Gardner-Denver, 420 ft. displacement; bargain.
PRIMARY CRUSHER with grizzly feeder—Pioneer 24x36" roller bearing—Feeder 40"x10'—new 1942—A No. 1; guaranteed.
POWER UNIT—Gasoline, six-cylinder, Wisconsin D2, 105 HP, 1000 RPM; rebuilt.
VIBRATING SCREEN—New Seco, HS, with electric motor, double deck, 4x8.
GASOLINE ROLLER—Galion, 3-wheel, four-cylinder; bargain.
TANDEM ROLLER—Gasoline, Buffalo-Springfield, 5-ton.
SAW TABLE—Beach, rip and cut-off with 6 HP Wisconsin engine.
LE TOURNEAU SCRAPER—Model X, 4½ yard, cable control.
AUSTIN-WESTERN—Scraper, four-wheel, cable type; 4-5 yard.
GASOLINE ENGINE—Waukesha, four-cylinder, 80-90 HP, Model WS16F.

ROY-C-WHAYNE SUPPLY COMPANY
800 W. Main St., Louisville 2, Kentucky
Ph. WAbash 1375

2½ Yd. Electric Cat. Shovel. New 1939.
1½ & 1¼ Yd. Shovel-Crane-Drag. combs.
Shovel Front &/or Parts for ¾ yd. P&H 206.
Monighan 3 Yd. Electric Walker Dragline.
2 Yd. 50-B Diesel Crane-Drag., Cummins eng.
1¼ Yd. Northwest Crane-Drag., 40-50' boom.
1 Yd. Osgood Dragline-Crane, with buckets.
½ Yd. Universal full rev. Crane, 30' boom.
Drag Scrapers & Slacklines, ¾ to 4 Yds.
Tractors - Angledozers - Bulldozers - Scrapers.
Koehring 12 yd. Diesel Tractor-Scraper, '41.
James Wood, 53 West Jackson Blvd., Chicago 4, Ill.

SPECIAL

1¾ yd. Link-Belt Dragline Diesel power built 1943.
½ yd. Bay City Combination Crane-Dragline-Shovel, Model 20, built 1939, with trailer.

"STONE — the CRANE MAN"
502 Insurance Exchange Bldg., Detroit 1, Michigan
PHONES: RAndolph 6156-4065

FOR SALE

2—135 K.W., AC Generators, direct connected to Fairbanks Morse Diesel engines

• • •

MERTES MACHINERY COMPANY
1622—So. 1st St., MILWAUKEE, WIS.

RAILS NEW AND RELAYING

MOST ALL SECTIONS IN STOCK also spikes, bolts, frogs, and switches available.
Always in the Market to buy surplus material. Send us your inventories.

M. K. FRANK
480 Lexington Ave., New York City — Park Building, Pittsburgh, Penna.
Blitz Bldg., Reno, Nevada — Havana, Cuba

Two (2) Besser Super K Tampers
One (1) Besser 40 cu. Ft. Mixer
5000 Plain Steel Pallets 12"x18½"
One (1) Diester (Leahy) Vibrator & Screens
One (1) Blystone 14 Cu. Ft. Mixer
Two (2) Anchor Tampers
3000 12"—3 Core Steel Pallets

MULTIPLEX CONCRETE CO., INC.
East Orange, New Jersey

FOR SALE

Crawler type—Steam shovel and crane boom
¾ yd.—Bucyrus Erie—Type B
Serial No. 984
EXCELLENT CONDITION

MANLEY SAND COMPANY
Rockton, Illinois

FOR SALE
1—750, 300, 150, 120 & 100 HP Full Diesels
1—65 & 150 HP Locomotive Type Boilers
1—50 KVA 2300-440-220 V. Eng.-Gen. Set
1—400 HP, 167# Heine W. T. Boiler
1—30 Ton, 40' Span O. E. T. Crane
1—75 HP, 100# Scotch Marine Boiler
1—2000 KW Turbo—Gen., with Surf. Cond.
1—60,000 Gallon Water Tank on Tower
Let us have your inquiries for Power Plant Equip.
H. & P. MACHINERY CO., 6719 Etzel, St. Louis

FOR SALE

No. 9 Allis-Chalmers Style K Crusher in good shape.
3 yard friction hoist, complete with electric motor and V-belt drive.
1 Type MR 42" x 96" Heavy Duty Double Deck Universal Vibrating Screen. New condition.

Box 113, c/o Pit and Quarry,
538 So. Clark St., Chicago 5.

WANTED

Shovel with Rock digging Bucket. Can use Steam—1¼ yd. to 2 yd. if in good shape and priced right. Or good late Model Diesel 1 or 1¼ yd.

Box 119
Pit and Quarry — 538 S. Clark St.
Chicago 5, Illinois

WANTED

TRACTORS, CRANES, SHOVELS AND TRUCKS, LATE MODELS FOR EXPORT SHIPMENT. CASH WAITING.

P. O. BOX 35
NEW ROCHELLE, NEW YORK
TEL. NEW ROCHELLE 2-7680

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully Guaranteed. Send us your inquiries.

V. M. NUSSBAUM & CO., Fort Wayne, Ind.

Wanted to Buy or Rent

Complete Stone Crushing Plant
Capacity 100 to 150 tons per hour.
Good Operating Condition

•

Box No. 117, care Pit and Quarry
538 So. Clark St., Chicago 5, Ill.

WANTED—

To Buy or Lease for 2 Years

8" Hydraulic Dredging Outfit capable of digging 25 ft. depth from top of water.

Write details to Wapak Sand & Gravel Co.
Wapakoneta, Ohio

Wanted No. 66 F. L. Smidth

KOMINUTER

Roeding & Arnold, Inc.
369 Lexington Ave., New York 17, N. Y.

WANTED

Delivery on or before March 1st Belt Conveyor 50" or 60" wide, complete with belt, all mechanical parts and power, prefer steel frame units to make up 1200 lin. feet of conveyor.

Box 111, c/o Pit and Quarry
538 So. Clark St. — Chicago 5, Ill.

WANTED

Caterpillar Diesel D4600 Engine

Homewood Sand and Gravel Co.
Blue Island, Ill.
Phone Riverdale 1060

WANTED

One 36"x48" or larger Jaw Crusher

•

The Central Silica Company
Masonic Temple, Zanesville, Ohio

SITUATION WANTED

Quarry Superintendent. 26 years experience in quarrys and plants producing from two hundred tons per hour up to seven hundred tons per hour. Experience in most all types of crushing equipment and shovels.

BOX 1240, c/o PIT AND QUARRY
538 South Clark St., Chicago 5, Illinois

POSITION WANTED

College Graduate with C E and M E Degree with fourteen years as Construction Supt. and six years Production Manager of large quarry operation, Ready Mix Concrete plant and Building Material Warehouse. Desires position as Construction Supt., Project Manager or Production Manager on Construction work or quarry operation.
Age 44, married, settled. Salary open. Draft status clear 4A.

Box 1135, c/o Pit and Quarry
538 So. Clark St. — Chicago 5, Ill.

Royal E. Burnham

Attorney at Law

Patent and Trade-Mark Causes

511 Eleventh Street, N. W.
WASHINGTON, D. C.

CORE DRILLING TEST BORING

Dundee Engineering Company
Dundee, Illinois

CORE DRILLING ANYWHERE

We look into the earth
PENNSYLVANIA DRILLING COMPANY
PITTSBURGH, PA.

Quarries
Crushing Plants
Cement Plants
Storage Methods
Operating Costs

E. Lee Heidenreich, Jr.

Consulting Engineer

Route No. 1, Newburgh, N. Y.
Phone 3677-M

Operation
Plant Layout
Design
Construction
Appraisals

WANTED

Man thirty to forty, with technical training and experience in mechanical layout, operation of heavy machinery and labor relations, to fill position of Assistant Plant Manager and Engineer in cement company in Middle West. Good working conditions and opportunity for advancement. Previous cement experience unnecessary. Reply giving personal information, training, business experience and enclose small photograph.

Box 105, c/o Pit and Quarry
538 So. Clark St., Chicago 5, Illinois

Wanted Plant Superintendent

Familiar with pipe, block or any special concrete product. Must have at least high school education, be mechanically inclined and have pleasing personality. Age limit 48. Postwar opportunity with large concern branching out into full line of products in various sections of the United States and operating on an incentive profit sharing plan. Past record must stand rigid inspection. Include photograph in reply.

Box 101, c/o Pit and Quarry
538 S. Clark Street, Chicago 5, Ill.

WANTED

Executive with experience in grinding, tabling, drying, acid treating Silica Sand. Must be able to design and construct entire layout. Eastern State location. State fully your qualifications and remuneration expected. Your reply will be treated confidentially.

Write Box 1230, c/o Pit and Quarry
538 So. Clark Street, Chicago 5, Illinois

SLACKLINE CABLEWAY
Complete with 95' Steel Mast—Two Drum Thomas Hoist with 75 H.P. Motor Controller & Grids One Yard Bucket

BOX CAR LOADER
Pratt Portable—Size No. 1

TERRE HAUTE GRAVEL COMPANY
34th St. and Ft. Harrison Rd., Terre Haute, Indiana

FOR SALE

McMyler Steam Crawler Crane—Excellent condition throughout.

HOMEWOOD SAND & GRAVEL CO.
Blue Island, Ill. Phone Riverdale 1060

FOR SALE

1—25 Traylor Gy. Crusher.
1—18" Belt Conveyor W/Belt 52 ft. long
1—Universal Rev. Screen 3' x 15'
1—Barber-Greene loader, spiral feed, on rubber.
1—24 ft. Boom only for 105 N.W. Shovel front
Heller Stone Co. **Bluffton, Indiana Rt1**

FOR SALE
Sand and Rock Business Located in Arizona

Suppliers of Engine Sand to one Railroad for past thirty years

Post War Outlook most favorable
Reason for selling been in ill-health for over a year

HASSAYAMPA SAND & ROCK COMPANY
Box 62, Wickenburg, Arizona

FOR SALE
Three Buckeye, vertical, 4 cycle, Diesel Engines.
1—80 H.P. Model "J" 4 cylinder, 514 R. P. M.
1—112½ H.P. Model "E" 3 cylinder, 400 R. P. M.
1—150 H.P. Model "E" 4 cylinder, 400 R. P. M.
Will sell separately or together. Available at once. Full information upon request.

Wire, write or phone.

G. S. PATTON, GASTONIA, NORTH CAROLINA

FOR SALE
1—New 6 cylinder, 4½ x 5¼ Continental Gasoline Engine 70 H.P. at 1300 R.P.M. Equipped #1 Flywheel Housing to fit Twin Disc B-1-11½ clutch complete with puller type fan, starter and generator. $760.00 F.O.B. Shipping Point.

Immediate Delivery

Box 103 — c/o Pit and Quarry
538 So. Clark St. Chicago 5, Ill.

PULVERIZERS
One (1)—Sturtevant Vertical Emery Mill, new emery stones recently. Price $675.00.
Four (4)—Kent Maxecon Ring Roll Mills, in good running condition, may be seen in operation. Price each $1675.00.
One (1)—Bradley 2 Roll Pulverizer. Price $1150.00.

WHITEROCK QUARRIES
Bellefonte, Pennsylvania

For Sale. One 40 ton American Locomotive, Standard gauge, air equipment, retubed 1943.

PENN ALLEN SLAG COMPANY
B. and B. Building
Allentown, Pennsylvania

For Immediate Sale

7 ½ Symons Gyratory Crusher
Can see it in operation

Rockledge Products Company
Portland, Indiana

FOR SALE
1—10" AMSCO pump 12" suction, directly connected to 250 HP Electric Motor, 505 RPM, 440 Volts, 60 Cycle, with Starter, Grids and Controls.
1—Set Webb City Crushing Rolls, 16" face 42" Diam. with 6' Heavy Flywheel, Manganese Tires. Also extra set Cast Iron tires new. New Bearings and completely overhauled since used.

LYNN SAND & GRAVEL CO., AVALON, MISS.

FOR IMMEDIATE DELIVERY OF RUBBER PRODUCTS

Conveyor Belting...Transmission Belting...Elevator Belting...Fire, Water, Air, Steam, Suction or Welding Hose, etc.

CALL, WIRE or WRITE
CARLYLE
THE RUBBER HEADQUARTERS

CARLYLE RUBBER PRODUCTS ARE NEW, GUARANTEED & LOW PRICED

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top-Bottom	Covers
48"	8	1/8"	1/16"
42"	5	1/8"	1/16"
36"	6	1/8"	1/16"
30"	6	1/8"	1/16"
30"	5	1/8"	1/16"
24"	5	1/8"	1/32"
24"	4	1/8"	1/32"
20"	5	1/8"	1/32"
20"	4	1/8"	1/32"
18"	4	1/8"	1/32"
16"	4	1/8"	1/32"
14"	4	1/16"	1/32"
12"	4	1/16"	1/32"

Inquire For Prices - Mention Size and Lengths

TRANSMISSION BELTING

HEAVY-DUTY FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	6	10"	6	6"	5
16"	6	10"	5	5"	5
14"	6	8"	6	4"	5
12"	6	8"	5	4"	4
12"	5	6"	6	3"	4

Inquire For Prices - Mention Size and Lengths

ENDLESS "V" BELTS

"A" WIDTH All Sizes | "D" WIDTH All Sizes
"B" WIDTH All Sizes | "E" WIDTH All Sizes
"C" WIDTH All Sizes | Sold in Matched Sets

Inquire For Prices - Mention Size and Lengths

PROTECT THAT PLANT
FIRE HOSE

APPROVED SPECIFICATION HOSE
EACH LENGTH WITH COUPLINGS ATTACHED

Size	Length	Per Length
2½"	50 feet	$28.00
	25 "	16.00
2"	50 "	23.00
	25 "	13.00
1½"	50 "	20.00
	25 "	11.00

Specify Thread On Couplings

SPECIAL OFFER . . . HEAVY DUTY
RUBBER HOSE

WATER HOSE
Each Length with Couplings Attached

I.D. Size	Length	per Length
¾"	25 feet	$4.25
1"	50 "	8.00
	25 "	6.25
1¼"	50 "	12.00
	25 "	7.50
	35 "	10.50
	40 "	12.00
1½"	50 "	15.00
	25 "	10.00
	35 "	14.00
	50 "	20.00

AIR HOSE

I.D. Size	Length	per Length	Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	6.25	2.50 "
	50 "	12.50	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

LARGER SIZES ALSO AVAILABLE
All Prices—Net—F.O.B. New York

CARLYLE RUBBER CO., INC.
62-66 PARK PLACE NEW YORK, N. Y.

CRUSHERS
1—28" x 36" Webb City Iron Wks. Roller Brg. Jaw Crusher with 75 HP 860 RPM 440 V West. type C. W. var. spd. motor, V-Belt Drive.
1—18" x 30" Telsmith Wheeling Roller Brg. with 50 HP 440 V West. type C. W. var. spd motor, and V-Belt Drive.
1—36" Telsmith gyrosphere with 60 HP West. type C. W. var. spd. motor, 440 V V-Belt Drive.
1—20" Traylor type TY secondary red. with 25 HP 440 V motor.
1—9" x 15" Traylor Chalmers Blake type with 15 HP motor.

SCREENS — VIBRATING
1—3' x 8' Symons S. D. Vibrating Screen, Model JK3-4, V-belt drive to 7½ HP, U. S. BB motor.
1—5' x 4' Leahy S. D. Vibrating Screen, with 1 HP, 1160 RPM motor and drive.
1—3' x 4' Symons D.D. Vibrating Screen, Model JW 7-2, with 5 HP, 1800 RPM, U S. BB motor and drive.

CONVEYORS
1—30" Conv. Belt 55' center with Thr. Rolls, Idlers, Hd. and T. Pulleys, 7½ HP gearmotor and drive.
1—20"-160' centers with Belt, Thr. Rolls, Idlers, Hd. and T. Pulleys, spur gear red. 10 HP motor and V-Belt Drive.
1—16"-43' centers, Stacker conveyor on steel frame with Thr. Rolls, Idlers, Hd. and T. Pulleys, 3 HP gearhead motor. V-Belt Drive.
Also large stock Air Compressors, Motors, Transformers, Drills, Drill Steel, etc.

PACIFIC MACHINERY COMPANY
150 MONTGOMERY STREET, SAN FRANCISCO, CALIF. Phone Sutter 3943-44

Index to Advertisers

*Allis-Chalmers Mfg. Co.....16-17
*American Air Filter Company, Incorporation 67
*American Cable Div. American Chain & Cable Co., Inc.....Inside Back Cover
*American Chain & Cable Co., Inc.....Inside Back Cover
American Cyanamid & Chemical Corp. 171
American Manganese Steel Co...160
*American Pulverizer Co..... 40
American Rubber Company.....203
American Zinc Company of Tennessee 226
Anchor Concrete Machy. Co.....194
Armstrong-Bray & Company.....223
Athey Truss Wheel Company.... 18
Atlas Powder Co..... 10
*Austin-Western Company 180

*Babcock & Wilcox..... 72
Bacon, Inc., Earle C.....170
*Barber-Greene Co. 205
*Barrett-Cravens Company 203
Baughman Mfg. Co.....223
*Bemis Bro. Bag Co..... 44
*Bethlehem Steel Co.....206
Birmingham Rail & Locomotive Co. 226
*Blaw-Knox Company 222
Brill Equipment Co.....227
Broadcast Section 226-235
Broderick & Bascom Rope Company 219
*Brooks Equipment & Mfg. Co...170
*Buda Company, The..... 65
Burnham, Royal E. 234
*Butler Bin Co.....197

Carlyle Rubber Co., Inc.....235
Carter Company, Ralph B.....224
Caterpillar Tractor Company..... 19
Chicago Perforating Co.....168
*Chicago Pneumatic Tool Company 59
Chicago Steel Foundry Co.....166
Cleveland Wire Cloth & Mfg. Co.225
Climax Engineering Company.....222
*Colorado Iron Works Co..... 46
*Columbus Conveyor Company.....222
Commercial Shearing & Stamping Co. 194
Concrete Pipe Machinery Company 201
Concrete Transport Mixer Company 203
Consereo, Inc. 198
Consolidated Products Co., Inc..228
Continental Gin Company..... 60
Cross Engineering Company.....221
*Cummins Engine Company.....12-13

Davenport Locomotive Works.....223
*Deister Machine Company.....164
*Dempster Bros., Inc.....207
*Denver Equipment Co..... 61
DeSoto Foundry, Inc.....220
*Dixie Machinery Mfg. Co.....161
*Dorr Company 32
Dundee Engineering Company....234
du Pont, E. I. de Nemours.....183

*Eagle Crusher Company, Inc.....225
*Eagle Iron Works.....154
*Easton Car & Construction Co... 1
*Ensign-Bickford Co., The..... 56
Equipment Corporation of America 226-232
*Erie Steel Construction Company.190
*Euclid Road Machy. Co.....211

*Fairbanks-Morse & Company..... 55
Farrel-Birmingham Company 21
Fiske Brothers Refining Company 152
Flexible Steel Lacing Co.....222
Flink Implement Company.....216
Frog, Switch & Mfg. Co.....169
*Fuller Co. 36-37

Gardner-Denver Company 214
Garson Iron & Steel Company..231
Gates Rubber Co..... 49
General Compressor & Tool Co..232
Gilson Screen Company, The.....166
Godfrey Conveyor Company.....168
Goodyear Tire & Rubber Company. 9
Gruendler Crusher & Pulverizer Co. 48

Haiss Mfg. Co., Inc., Geo.....212
*Hanson Clutch & Machinery Company 175
*Hardinge Company 158
Harnischfeger Corporation 8
Hawkins & Company.....230
Heidenreich, Jr., E. Lee.....234
Heltzed Steel Form & Iron Company 196
*Hendrick Mfg. Co.....217
Hendy Iron Works, Joshua.....210
Hercules Powder Co..... 15
Hercules Steel Products.....156
Hetherington & Berner, Inc.....159
Highway Equipment Company....220
Honan Crane Corporation.....219

Independent Pneumatic Tool Company 63
Industrial Brownhoist Co.....165
*Ingersoll-Rand 26
Inland Equipment Company.....230
*Iowa Manufacturing Co..... 45
Iron & Steel Products.....231, 232

*Jackson & Church Co.....185
*Jaeger Machine Co.....203
*Jeffrey Mfg. Co.....208

Kansas City Hay Press Co.....224
*Kennedy-Van Saun Mfg. & Engr. Corp. 22-23
Kent Machine Co. 192
King Powder Co., Inc.....179
Koehring Company 174

*Laughlin Co., Thomas.....157
*Leschen & Sons Rope Co., A....184
*LeTourneau, Inc., R. G..... 31
Lima Locomotive Works.....218
Lime & Hydrate Plants Co..... 20
*Link-Belt Co. 221
Lubriplate Division, Fiske Bros. Refining Co. 152
Ludlow-Saylor Wire Co.....Inside Front Cover

*Machin Company, The E. C.....169
Mack Trucks Inc.....178
*Macmillan Petroleum Corporation 28
Maguire Industries, Inc..... 57
*Manitowoc Engineering Co..... 34
Marquette Cement Manufacturing Co. 202
McGann Manufacturing Co..... 20
*McLanahan & Stone Corp.....173
*Merrick Scale Co.....162
Michigan Silica Company.....228
*Morris Machine Works.....155
Motor Truck Sales & Equipment Company 200
Mott Core Drilling Company.....225
*Multiplex Concrete Machy. Co....202

National Supply Co., The..... 29
*National Wire Cloth Co., Inc....224
Naylor Pipe Co.....153
Neff & Fry Company.....202
New Holland Machine Co.....167
Nicholson Company, The.....181
*Nordberg Mfg. Co..... 42
Northwest Engineering Company. 3

O'Neill, A. J.....233
Osgood Company, The.....172
*Owen Bucket Co.....225

Pacific Machinery Company.....235
Patterson Equipment Co.....228
Pennsylvania Crusher & Pulverizer Company 47
Pennsylvania Drilling Co.....234
*Pioneer Engineering Works, Inc.. 35

*Quaker Rubber Corp..... 62

Raybestos Division of Raybestos-Manhatten 53
*Raymond Pulverizer Div. of Combustion Engineering Co., Inc.38-39
RayOil Burner Company.....221
Republic Rubber Company.....147
*Robins Conveyors Incorporated... 27
Ryerson & Sons, Inc., Joseph T..163

St. Regis Paper Company..... 52
*Sauerman Bros., Inc.....163
Schaffer Poidometer Co. 167
Schramm, Incorporated 71
*Scientific Concrete Service Corp..192
*Screen Equipment Co., Inc.....216
Seitzingers Sons, Thomas F.....225
Sheppard Company, The R, H...213
SKF Industries, Inc..... 51
Simplicity System Company.....224
Sinclair Refining Company, Inc..151
*Sly Mfg. Co., The W. W.....149
*Smidth & Co., F. L..... 33
Smith Engineering Works.....215
Smith Machinery Co., Sam.....229
Socony-Vacuum Company 6-7
*Smith Company, The T. L.....195
Southern Iron & Equipment Co..226
Sprout, Waldron & Co., Inc.....224
Stanhope, Inc., R. C.....226
*Stearns Mfg. Co.....204
"Stone," the Crane Man.....226
*Sturtevant Mill Co.....177
Superior Engine Division The National Supply Co..... 29
*Syntron Co. 193
Swabb, Frank 231

Taylor Forge & Pipe Works.....182
Taylor-Wharton Iron & Steel Co.. 54
Texas Company, The..... 69
Thermoid Rubber, Division of Thermoid Company 58
Thew Shovel Co..... 4
Towmotor Corporation 191
Thornton Tandem Company.....199
Trackson Company 25
*Traylor Engineering & Mfg. Co.. 11
Trojan Powder Company..... 41
Truck Engineering Company.....218
Twin City Iron & Wire Co.....224
*Tyler Co., The W. S..... 50
Tyson Bearing Corporation..... 24

*United States Treasury Department 176
Universal Concrete Pipe.....202
*Universal Engineering Corp.....209
Universal Road Machy. Co.....223
*Universal Vibrating Screen.....224
*Unverzagt & Sons, G. A.....232
Upson Walton Company..... 2

Vander Horst Corporation of America 14

Walsh Co., Richard P.....227
Webber Equipment Company.....231
*Wellman Engineering Co.....217
Wellman Company, The S. K... 43
*Western Precipitation Corp..... 5
Whayne Supply Co., Roy C.....233
*Wickwire Spencer Steel Co..... 64
Wilder, H. C.....227
*Williams Pat. Crusher & Pulverizer Company 66
Wisconsin Motor Corp.....165
Wood's Sons Company, T. B..... 30
Worthington Pump and Machinery Corp.....236, Outside Back Cover

Yates Machine Works.....227

*See also Detailed Information in 1944 Pit and Quarry HANDBOOK

Here Is Your Nearest Worthington Distributor

For Sales, Rentals and Service on BLUE BRUTE Portable Compressors, Rock Drills and Air Tools.

See full page ad on opposite page.

ALABAMA
Birmingham—Tractor & Equipment Co.
ARIZONA
Phoenix—Smith Booth Usher Company
ARKANSAS—Fort Smith—R. A. Young & Son
Little Rock—R. A. Young & Son
CALIFORNIA
Los Angeles—Smith Booth Usher Company
San Francisco—Edward F. Hale Company
CONNECTICUT
Hartford—The Holmes-Talcott Company
GEORGIA
Atlanta—Tractor & Machinery Co., Inc.
ILLINOIS—Chicago—Kennedy-Cochran Co.
INDIANA
Indianapolis—Reid-Holcomb Company
IOWA—Des Moines—Electrical Eng. & Constr. Co.
Davenport—Industrial Engineering Equipment Co.
KENTUCKY—Harlan—Hall Equipment Sales
Louisville—Williams Tractor Company
LOUISIANA
New Orleans—Wm. F. Surgi Equipment Company
MAINE—Augusta—Murray Machinery Co.
MARYLAND
Baltimore—D. C. Elphinstone, Inc.
MASSACHUSETTS
Cambridge—W. W. Field & Son, Inc.
Springfield—The Holmes-Talcott Company
MICHIGAN
Detroit—W. H. Anderson Company, Inc.
Muskegon—Lakeshore Machinery & Supply Co.
MISSOURI
Kansas City—Machinery & Supplies Company
MONTANA—Helena—Caird Engineering Works
NEW JERSEY
Hillside—P. A. Drobach
North Bergen—American Air Compressor Corp.
NEW MEXICO
Roswell—Smith Machinery Company
NEW YORK
Albany—Larkin Equipment Company
Albany—T. Southworth Tractor & Machy. Co., Inc., Menands
Binghamton—MacDougall Equipment Co.
Buffalo—Dow & Company, Inc.
New York—Hubbard & Floyd, Inc.
Olean—Freeborn Equipment Company
Oneonta—L. P. Butts, Inc.
Syracuse—Harrod Equipment Company
OHIO—Cincinnati—The Finn Equipment Company
Cleveland—Gibson-Stewart Company
Marietta—Northwest Supply & Equipment Co.
Toledo—M. W. Kilcorse & Company
OKLAHOMA
Oklahoma City—Townsco Equipment Co.
OREGON
Portland—Andrews Equipment Co.
PENNSYLVANIA
Easton—Sears & Bowers
Harrisburg—N. A. Coulter
Oil City—Freeborn Equipment Company
Philadelphia—Metalweld, Inc.
Pittsburgh—Atlas Equipment Corp.
Wilkes-Barre—Ensminger & Company
SOUTH CAROLINA
Columbia—Bell-Lott Road Machinery Co.
SOUTH DAKOTA
Sioux Falls—Empire Equipment Co.
TENNESSEE
Chattanooga—James Supply Company
Knoxville—Wilson-Weesner-Wilkinson Co.
Memphis—Tri-State Equipment Company
TEXAS—Dallas—Shaw Equipment Company
El Paso—Equipment Supply Company
Houston—Dye Welding Supply Co.
San Antonio—Patten Machinery Company
VIRGINIA
Richmond—Highway Machinery & Supply Co.
WASHINGTON
Seattle—Star Machinery Company
Spokane—Andrews Equipment Service
WEST VIRGINIA
Fairmont—Interstate Engineers & Constructors
WYOMING
Cheyenne—Wilson Equipment & Supply Co.

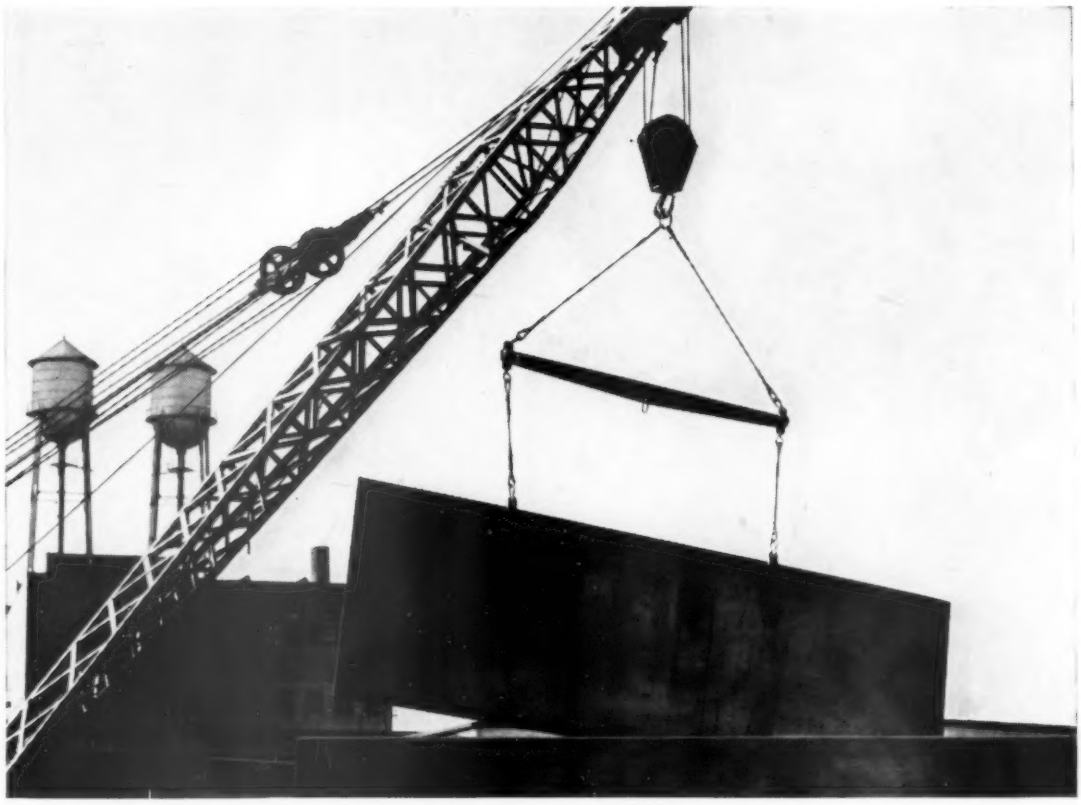
★ ★ ★

Get more WORTH from air with WORTHINGTON

Big Blue Brutes

Worthington Pump and Machinery Corp.

for the Everyday Jobs ahead...



Specify TRU-LAY *Preformed*

Regardless of the job at hand or immediately ahead, you'll find that American Cable **TRU-LAY PREFORMED WIRE ROPE** handles easier, reeves faster, lasts longer, is safer for the workmen.

It is the preforming process, scientifically applied at the mill, that endows **TRU-LAY** with high fatigue resistance. Being more flexible than non-preformed, **TRU-LAY** bends easily, is pre-broken-in, resists kinking and whipping, spools better. Being free of internal stresses, **TRU-LAY** does not squirm or rotate in sheave grooves. This saves both rope and sheaves. The preforming process has enabled rope to set new and higher standards of service, and **TRU-LAY** is the original preformed wire rope. Specify **TRU-LAY PREFORMED** for your next line.

AMERICAN CABLE DIVISION

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma

AMERICAN CHAIN & CABLE • BRIDGEPORT

ESSENTIAL PRODUCTS • TRU-LAY Aircraft, Automotive, and Industrial Controls • TRU-LOC Aircraft Terminals • AMERICAN CABLE Wire Rope • TRU-STOP Brakes • AMERICAN Chain • WEED Tire Chains • ACCO Malleable Castings • CAMPBELL Cutting Machines • FORD Hoists, Trolleys • HAZARD Wire Rope • MANLEY Auto Service Equipment • MARYLAND Bolts and Nuts • OWEN Springs • PAGE Fence, Shaped Wire, Welding Wire • READING-PRATT & CADY Valves • READING Steel Castings • WRIGHT Hoists, Cranes • WILSON "Rockwell" Hardness Testers

In Business for Your Safety

TWO WAYS TO INSURE A POST WAR FUTURE

HERE'S ONE WAY:—*The Institute of Life Insurance reports leading insurance companies laying plans for another 100 million dollars of housing within 6 months after the war.*

HERE'S THE SECOND:—*U. S. building contractors planning now their purchases of trouble-free Blue Brutes to back their post-war bids.*

That 160′ compressor shown above—just one of many types and models—you'll see displayed in post-war Blue Brute showrooms.

Outside—*looks* fit and strong—but look *inside*. Clean-muscled design, with Feather* Valves (above all imitations, lightest, tightest, quietest), saves hours and dollars downtime. Engine—smooth-running six—start it and hear it hum! And note—both engine and compressor "cradled" by special unit coupling in 3-point suspension, safe from vibration, shock, distortion.

For earth work, gas lines, light lines, drains, you'll want that Blue Brute Backfill Tamper too (the W-8)—to save hand-tamping time; rugged but easy-handling, made of special steel.

In brief, with these Blue Brutes, you've got an air-power team that saves construction costs. Your nearest Blue Brute distributor is listed on page 236.

*Reg. U. S. Pat. Off.

PC 4-19

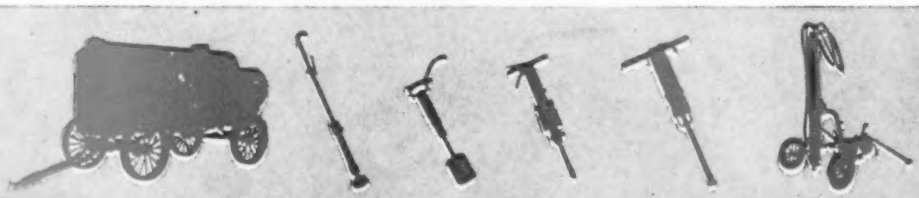
Behind the Fighting Fronts with

BLUE BRUTES

On a midwest construction job, contractor reports: "Five Blue Brute compressors in service 6 months, untouched except for oil change"—and the same top-notch performance makes Blue Brutes pay, on fighting supply lines here and overseas, camps, Navy yards, air bases, ordnance plants. Will save *you* time and cash post-war.

Get more WORTH from air with WORTHINGTON

BUY BLUE BRUTES



Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs. Rock Drills and Air Tools that have always set the pace for easy operation — available in a wide range of weights and sizes.

WORTH Behind the Name WORTHINGTON

Worthington Pump and Machinery Corporation Construction Equipment Division, Holyoke, Massachusetts